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# SINKING FUNDS RESERVE FUNDS AND DEPRECIATION

J. H. BURTON

PITMAN







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RESERVE FUNDS, AND  
DEPRECIATION**

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# SINKING FUNDS, RESERVE FUNDS, AND DEPRECIATION

BY

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## PREFACE

THE subject of Sinking Funds, Reserves, and Reserve Funds is one which appears to be very little understood by the majority of students. This has certainly been the case in my experience with pupils both commercial and municipal. Many requests to deal with the matter fully, in class, have been received.

With the object of helping those persons I prepared some notes and illustrations and now in the hope that the information may benefit a much wider circle of students I have made numerous additions and have arranged the notes for publication in book form.

A matter closely allied to Sinking Funds and Reserve Funds is "Depreciation." And to me it seems most fitting that it should be treated along with them. I have endeavoured also to touch upon the subject of "Appreciation of Assets," a matter of very considerable importance at the present time.

The latter part of the book deals with the same subject-matter from the municipal standpoint, an aspect little understood by commercial men and the younger municipal students.

Some of the points of view I have endeavoured to explain, especially those in the last three chapters, are controversial, but I have not hesitated to express my own opinions because I believe they have a sound foundation

J. H. B



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# **SINKING FUNDS, RESERVE FUNDS, AND DEPRECIATION**

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## **CHAPTER I**

### **SINKING FUNDS**

#### **DEFINITION AND KINDS OF SINKING FUNDS**

A **SINKING Fund** is a fund composed of sums of money set aside periodically to provide a definite amount for a specific purpose at a certain future date.

The term appears first to have been applied by the Government to the revenue moneys employed in the reduction of the National Debt by the purchase for cancellation of Government Stock.

However, no matter what its origin, at the present time the expression is used to cover any systematic accumulation of moneys where a fixed amount is required at a definite future date.

There are two kinds of Sinking Fund, viz.—

- (1) The Accumulating Sinking Fund ; and
- (2) The Non-Accumulating Sinking Fund.

The second may be dealt with summarily. It is by far the more simple. The annual contributions are equal, and are calculated by dividing the total amount required by the number of years during which the figure must accumulate. The instalments may or may not be invested, but in either case no interest is added to the fund. Hence the term “non-accumulating.” Any interest accrued is usually credited to Revenue Account, or is applied in reduction of the revenue contributions to the fund.

No. 1 is a little more complex, and consequently requires more attention. Here, interest on periodical investments of the fund is an important factor in computing the annual instalment.

The Accumulating Sinking Fund consists of the periodical setting aside of such sums which, if invested each year, together with the investment of all interest thereon as it accrues, will amount to the specific figure at the date on which the amount is required. It will thus be observed that the annual appropriation is smaller under No. 1 than under No. 2, as in the former case the final figure consists of instalments plus compound interest, while the latter contains instalments only. However, it does not follow that the Accumulating Sinking Fund, necessitating a smaller debit to revenue, is the more economical, as will be demonstrated presently.

### HOW CREATED

As has already been stated, a Sinking Fund consists of instalments of money set aside. It must now be considered whether the fund is being accumulated to provide for a payment which it is known will certainly have to be effected on a stated date, for example, the replacement of an asset, or whether the object in view is merely to establish a fund to be applied in a certain direction in the discretion of those in authority whenever they determine, e.g. the repayment of a liability, such as mortgage debentures. The reason for this differentiation arises because the annual charge for a Sinking Fund to replace an asset is a charge against profits, while that for a fund created to repay a liability is not. The former is debited to Profit and Loss Account, whether a profit is made or not; the latter is an appropriation of profit.

There is, however, an exception to this procedure, in the case of a local authority, which establishes a Sinking Fund compulsorily to repay borrowed moneys within the period sanctioned by the Government Department concerned. Here the annual charge, although for repayment of a liability, is a charge which must be borne out of current income.

### OBJECT

The object of a Sinking Fund is periodically to earmark a portion of the revenue, and so provide a means whereby a large sum will be available for payment in any particular direction without financially affecting the concern. Thus the object for which the fund is created may be—

(1) The liquidation of a liability, as the repayment of loans ; or (2) to replace a specific asset, as a lease, buildings, plant, machinery, etc.

Where the aim of the Sinking Fund is to replace a specific asset, the object is the same as when a Depreciation Fund is created. The portion of revenue so set aside, whether retained in cash, whether used as working capital, or whether invested in outside securities, *in no case represents a surplus of assets over liabilities.* This is so because it approximates the shrinkage in value of the asset in question which latter is being shown in the Balance Sheet at cost, even though its actual value is considerably less. This procedure continues until enough has accumulated to buy another similar asset in substitution, and if the provision has been exactly correct, neither too little nor too much, the apparent excess of assets over liabilities is not real because the asset is overstated by reason of the provision for depreciation being shown on the liabilities side of the Balance Sheet as a balance on Sinking Fund,



Depreciation Fund, or whatever name it may be called, instead of being deducted from the asset.

An illustration will prove this—

BALANCE SHEET (No. 1)

<i>Liabilities.</i>		<i>Assets.</i>	
Share Capital . . .	£ 100,000	Machinery . . .	£ 12,000
Depreciation Fund or Sinking Fund (earmarked for depreciation of machinery)	12,000	Other assets . . .	100,000
	<u>£112,000</u>		<u>£112,000</u>

Apparently, from the above Balance Sheet, there is a surplus of assets over liabilities to the extent of £12,000, but this is not so. The Share Capital of £100,000 is represented by "other assets." The machinery is of no value, its life is spent, but in order that capital should not be used up, a figure approximating to each year's proportion of its value has been appropriated from revenue, and is represented by the Depreciation Fund, which if shown as a deduction from the machinery item would exhibit the true state of affairs.

When, however, the Sinking Fund is for the repayment of loan capital, the position is quite different. The trading periods do not use up the capital as they do assets, consequently all moneys accumulated in this way, whether termed Sinking Funds or not, are really Reserve Funds and *always represent a surplus of assets over liabilities*. This statement is proved by a reference to Balance Sheets Nos. 7 and 8.

Sinking Funds form an important and rather complicated set of accounts with most of the larger local authorities, as may be verified by an inspection of the annual Abstract of the Treasurer's Accounts of one of the more important corporations. Here the points

to consider are numerous, as many regulations of the Ministry of Health have to be complied with.

### **DISTINCTION BETWEEN A SINKING FUND AND A RESERVE FUND**

One thus sees that a Sinking Fund is created for a definite object, while a Reserve Fund need not be so earmarked. A Reserve Fund may exist for a purpose such as generally to increase the stability of the concern, while a Sinking Fund may not.

Another important distinction arises in the fact that a contribution to a Sinking Fund is, in the greater number of cases, a charge against current revenue, quite irrespective of the earning of profit, but transfers to Reserve Fund are always appropriations of profits, and so can only be effected when profits allow of such a course.

### **METHOD OF CALCULATION**

As was mentioned under the previous heading, the calculation of the non-accumulating fund is by simple division, i.e. total of fund divided by the number of years in the period. Now let the computation of the annual instalments of the Accumulating Sinking Fund be considered. It is known that each instalment must be of such an amount that if invested each year, together with the investment of the interest on the investments, the total accumulations at the end of the period will amount to the figure required.

Suppose, by way of example, it is desired to accumulate a Sinking Fund to provide £10,000 in ten years, the rate of accumulation being taken at 5 per cent per annum. A simple calculation will show that an annual investment of £1 at 5 per cent compound interest will at the end of ten years amount to £12.577892. Now, if £1 per annum amounts to

£12·577892, the annual figure required to amount to £1 is  $1 \div 12\cdot577892$ , which equals ·0795046. Therefore, if an annual instalment of ·0795046 produces £1 in the period stated, the yearly contribution to raise £10,000 will be  $\cdot0795046 \times 10,000 = \text{£}795 \text{ Os. } 11\text{d.}$

It is not, however, the general practice to make such calculations whenever a new Sinking Fund is created, as one can obviate 90 per cent of the work by using one of the several books of tables now on the market. These tables show the equal annual sums to be set apart and accumulated at compound interest in order to provide £1 at the end of any number of years, generally terminating at 100, at various rates per cent. The annual instalment is quoted as a decimal (to six or eight places) of £1. This figure is simply multiplied by the amount to which the Sinking Fund must accumulate, and thus the periodical revenue charge is ascertained.

Let a practical illustration be taken. By calculations, as explained above, one can form a table for oneself. Assuming the rate of interest on accumulations to be 5 per cent the table appears as follows—

Number of years during which the fund is to accumulate.	Annual amount to be set aside to provide £1.
1	1·0000000
2	·4878049
3	·3172086
4	·2320118
5	·1809748
6	·1470175
7	·1228198
8	·1047218
9	·0906901
10	·0795046

Now let it be assumed that it is desired to create a Sinking Fund which will accumulate to £10,000 at

the end of ten years, the rate of interest being 5 per cent per annum. It is customary, or at least advisable, to work out a schedule of accumulations as they should appear at the end of each year until the last. The schedule would be as under—

CALCULATIONS SHOWING THE ANNUAL SINKING FUND REQUIRED TO REPAY A LOAN OF £10,000 IN 10 YEARS, THE RATE OF ACCUMULATION BEING 5%

Year ending.	Annual instalments charged to Revenue Account to accumulate at 5%.		Annual interest earned on Investments of the Fund.		Annual Payments into the Sinking Fund (Cols. 2 and 3).		Total amount in Sinking Fund at end of each year (i.e. amount at end of previous year, plus Col. (4))	
(1)	(2)		(3)		(4)		(5)	
31st March—	£	s. d.	£	s. d.	£	s. d.	£	s. d.
1921	785	— 11	—	— —	785	— 11	785	— 11
1922	785	— 11	39	15 —	834	15 11	1,629	16 10
1923	785	— 11	81	9 10	876	10 9	2,506	7 7
1924	785	— 11	125	6 4	920	7 3	3,426	14 —
1925	785	— 11	171	6 9	966	7 8	4,393	2 6
1926	785	— 11	219	13 2	1,014	14 1	5,407	16 7
1927	785	— 11	270	7 10	1,065	8 9	6,473	5 4
1928	785	— 11	323	13 3	1,118	14 2	7,591	19 6
1929	785	— 11	379	12 —	1,174	12 11	8,766	12 5
1930	785	— 11	438	6 8	1,233	7 7	10,000	— —
	£7,950 9 2		£2,049 10 10		£10,000 — —			

These calculations have been made on the assumption that at the end of each year that year's revenue contribution (i.e. column 2) will immediately be invested, together with the interest on the previous years' investments (in gilt-edged securities), the interest thereon being 5 per cent.

In connection with the investment many difficulties arise, of which may be mentioned—

- (1) The inability always to find a place of investment.
- (2) The date of redemption of such investment.
- (3) The interest on it.
- (4) The possible fluctuation in the market price both of the capital value and of the interest thereon.

Even when (1) and (2) are overcome, the interest question is apt to give rise to trouble, inasmuch as one

year it may be below the figure while another it may be above it. Whether below or above, the result is that at the end of the Sinking Fund period the total of the fund is different from the figure for which the calculations were made. If the state of affairs be an increased amount there is no inconvenience. But in a reverse case the deficiency would have to be charged to the current year's Revenue Account. On a large Sinking Fund the shortage might be a considerable one. If there be a depreciation in the investments this is no doubt the worse calamity for obvious reasons.

In the case of a local authority such a loss would be a serious one, for the requirements of the Government Department that sanctioned the borrowing would not be complied with unless the whole of the deficiency of the fund were charged in the last year's Revenue Account. Even though trustee investments be chosen the position is not ameliorated.

In the case of a commercial undertaking it may be more profitable to invest the instalment with an insurance company as annual premiums on an endowment policy.

Probably the more convenient method is to credit all interest on the investments to Revenue Account, and to let the debit to that account (i.e. the annual transfer to Sinking Fund) be the total of column 2, plus column 3. In this way the fund will always reach the required figure, and all differences in connection with interest will be automatically adjusted, a better plan than that of leaving the adjustment to the last year. Thus, reverting to the example, the revenue contribution for each year would be the figure in column 4 opposite that year. The next consideration is the necessity or the desirability of investing the Sinking Fund.

### INVESTMENT OF THE SINKING FUND

Just as a Reserve Fund can exist without any corresponding investment outside the business, so can a Sinking Fund so exist. There are many cases in which the money representing the annual instalments to the fund may be much more productive as additional working capital if retained in the business than if invested elsewhere at a comparatively low rate of interest. But if so retained, can there be any definite assurance that at the close of the Sinking Fund period when the money is required the concern will be able to stand so heavy a withdrawal without suffering a serious financial disturbance? Probably not, and of the two options its investment, if only in a separate banking account, is the safer.

Having agreed that investment outside the concern is desirable, though not a necessity, the factors governing investment should be considered. The most important are—

(1) The direction of the investment. Are the securities gilt-edged? Are they certain not to depreciate by the date of redemption? If these questions cannot be answered satisfactorily, it is better to seek a little longer.

(2) Sinking Funds of local authorities may be invested in certain securities only. The Trust Investment Act, 1889, and the Trustee Act, 1893, provide that a local authority may invest its Sinking Funds in trustee securities, with the exception of real estate and the authority's own securities. While the ordinary commercial undertaking is quite free to invest where it chooses, it is, perhaps, more prudent to keep within the limits imposed on local authorities, excepting, of course, the two restrictions just stated.

(3) It is quite unnecessary here to specify the

trustee investments, but it may not be out of place to state some of the principal ones: British Government Funds; India Stock; certain Colonial Stocks; Stocks of the Bank of England and the Bank of Ireland; London and other County Council Stocks and the Stocks of Municipal Boroughs whose population, according to the last census, exceeds 50,000; certain Stocks and Shares of Railway, Canal, and Water Companies.

### ALTERNATIVES TO INVESTMENT

First, let it be stated that under this heading do not come Sinking Funds retained in the business, though such retention is an investment, although not an outside one. The alternatives to investment are—

(1) To apply the annual instalments in the redeeming of loans or debentures or the purchase of the undertaking's own stock in the open market; and

(2) To use the Sinking Fund as new capital.

The former method of dealing with the fund applies only when it is created solely for the purpose of redeeming debt, and as this purpose is probably the one for which the majority of Sinking Funds are established, the method seems worthy of mention. The specimen Sinking Fund is calculated on a 5 per cent basis, so it follows that if debentures on which a greater interest is being paid (and one cannot easily get money so cheaply as 5 per cent) can be redeemed at par, the gain in so applying the instalments of the fund, as compared with its accumulation, is obvious. The same applies to the purchase of stock in the open market. Stock yields more than 5 per cent dividend, so if it can be bought at such a price that the investment of money in it yields more than the interest obtained on gilt-edged securities, then the practice is

economical. Incidentally, the usage of Sinking Funds in this way gradually reduces the debt of the concern, and perhaps this may be advantageous as opposed to redeeming it in bulk. In the exercise of the second alternative many important advantages accrue.

### THE USE OF SINKING FUNDS AS NEW CAPITAL

Here, again, a considerable saving may ensue if properly managed. Additional capital may be required, and the utilization for this purpose of accumulated funds may be the means of effecting a considerable saving in expenses of issue and discount on stock, and also the annual saving of the difference between the interest received on the accumulations of the Sinking Fund and that payable on new issues of capital.

Let a practical example be taken. It would be difficult to issue 5 per cent stock at a greater price than (say) 90 per cent (the figure would probably be much lower). This means that a saving of £10 per cent is effected by the use of Sinking Funds as new capital. But the saving does not stop here, for interest would have to be paid on this £10 during the whole loan period, and there would be several other expenses, including stamp duties. In addition, income tax is deducted from revenue from invested funds, and the seeking and making of investments cost money. Briefly stated, the utilizing of Sinking Funds in this way has the effect of issuing new stock or loans at a comparatively low rate of dividend at par, without any expenses of issue and minus the labour attending such an issue.

The method of accounting is to deduct from the debt on which the Sinking Fund is being accumulated portions of the debt at par equal to the amount of Sinking Fund so applied, and a similar amount carried



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to the new capital purpose. In effect the transactions are—

(1) As regards the account from which the stock and the Sinking Fund thereon are transferred, the result is the same as if the stock were redeemed at par and cancelled ; and

(2) As regards the new borrowing the effect is as though new stock had been issued at par without any expenses of issue.

Perhaps an illustration will show the position more clearly. Let the following Balance Sheet represent the state of affairs before the transfer is effected—

BALANCE SHEET (No. 2)

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Ordinary and Preference Share Capital .	200,000	Sundry Assets .	340,000
Stock (or Debentures) old purpose .	100,000		
Sinking Fund, balance at credit thereof .	40,000		
	<u>£340,000</u>		<u>£340,000</u>

£30,000 of the Sinking Fund is applied as new capital, the position then is—

BALANCE SHEET (No. 3)

<i>Liabilities.</i>	£	<i>Assets.</i>	£
O. and P. Share Capital	200,000	Sundry Assets .	340,000
Stock or Debentures, old purpose .	70,000		
Stock or Debentures, new purpose .	30,000		
Loans redeemed <sup>1</sup> .	30,000		
Sinking Fund—Balance	10,000		
	<u>£340,000</u>		<u>£340,000</u>

<sup>1</sup> In the case of a commercial firm this would be termed Reserve Fund; in a local authority, Loans Redeemed, or Surplus.

### OPERATION OF SINKING FUNDS IN THE REPAYMENT OF LOANS

Assuming the Sinking Fund has accumulated to the desired amount, the investments, if any, must be realized, the position then being—

BALANCE SHEET (No. 4)

<i>Liabilities.</i>	<i>£</i>	<i>Assets.</i>	<i>£</i>
Share Capital . . .	100,000	Cash and other Assets	200,000
Debentures . . .	50,000		
Sinking Fund . . .	50,000		
	<u>£200,000</u>		<u>£200,000</u>

Redeem the debentures and the position is—

BALANCE SHEET (No. 5)

<i>Liabilities.</i>	<i>£</i>	<i>Assets.</i>	<i>£</i>
Share Capital . . .	100,000	Cash and other Assets	150,000
Sinking Fund . . .	50,000		
	<u>£150,000</u>		<u>£150,000</u>

As the contingency for which the Sinking Fund was created is now passed, the term "Sinking Fund" is a misnomer, and should be styled "Surplus," "Loans Redeemed," or "General Reserve."

Thus it will be observed that the credit balance on Sinking Fund Account remains after the object for which it was established has ceased to exist. This could be extended to the extent of repaying all liabilities and capital out of Sinking Fund or Reserve Fund created out of profits or charges to Revenue Account, and as this does not reduce the capital assets, such would exist, even though there were no liability.

The position is shown by the following—

BALANCE SHEET (No. 6)

<i>Liabilities.</i>		<i>Assets.</i>	
Capital and Loans repaid . . .	£150,000	Assets . . .	£150,000

These examples illustrate the fact that the provision of a Sinking Fund is in this case not a charge against profits, but an appropriation of profits, the book-keeping entries being Profit and Loss Appropriation Account *Dr.* to Sinking Fund Account, and can only be made when profits are available, while if the fund is established to provide the means for renewing a specific asset the entries are Profit and Loss Account *Dr.* to Sinking Fund Account, and must be effected even though a loss on the year's trading result. Thus the difference between a Sinking Fund created for replacing an asset and one for the redeeming of a liability is that the former is a charge against profits, while the latter is not, with the result that when the former is applied the fund is utilized in writing off the old asset, while, in the other case, the fund still remains, and can be transferred to the General Reserve Fund. As an illustration, the following Balance Sheet may be taken—

BALANCE SHEET (No. 7)

<i>Liabilities.</i>		<i>Assets.</i>	
	£		£
Share Capital . . .	100,000	Lease (now expired) . .	10,000
Mortgage Debentures . .	20,000	Investments . . .	30,000
Sinking Funds		Other Assets . . .	110,000
(1) For repayment of a liability . .	20,000		
(2) For replacing an asset . .	10,000		
	<u>30,000</u>		
	£150,000		£150,000

Realize the investments, renew the lease and repay the mortgage debentures, and the position is as hereunder—

BALANCE SHEET (No. 8)

<i>Liabilities.</i>	<i>£</i>	<i>Assets.</i>	<i>£</i>
Share Capital . . .	100,000	Lease (New) . . .	10,000
Loans repaid (this figure may now be termed: "General Reserve Fund," "Surplus," or "Loans Redeemed")	20,000	Other Assets . . .	110,000
	<u>£120,000</u>		<u>£120,000</u>

Here the Sinking Fund for the redemption of debt still remains, while the other, for replacing an asset, has been depleted.

### ADVANTAGES AND DISADVANTAGES

The great financial advantage in the formation of a Sinking Fund is the provision of the wherewithal to meet certain heavy payments becoming due at a known future date. The fund, being so earmarked, is preserved from use for any purpose other than that for which it was specifically provided, and the corresponding investments are also earmarked for that particular purpose. It thus enables a large sum to be paid away with a minimum of financial inconvenience. ✓

The principal disadvantages arise in the difficulty in finding a suitable investment for the periodical instalments, having regard to the interest which must be earned, the date of redemption, the possibility of loss through depreciation of the investments, and the cost of making such investments. But all these ✓

disadvantages are obviated if one or other of the alternatives to investment be adopted.

#### OTHER METHODS OF PROVIDING SINKING FUNDS

Another method of providing a Sinking Fund is by taking out an endowment policy to mature at the date of the requirement of the fund. This course dispenses with the calculations and difficulties connected with the receipt and investment of interest or dividends, and the amount receivable is not liable to fluctuation. But this course is not so economical, nor so remunerative as the ordinary Sinking Fund, as is apparent from the fact that the surrender value of such a policy is usually represented by the premiums paid (less the first, which is retained by the company to cover expenses) plus compound interest at a low rate.

It is possible to accumulate a Sinking Fund by periodically investing cash without making a debit to Revenue Account, but this cannot be recommended, for two reasons—

(1) That the balance of the Revenue Account cannot be entirely distributed as dividend, but a portion must be carried forward. If fully disbursed, the financial position might become seriously affected by a depletion of the working capital.

(2) The accumulation of a fund acts as a check on the investments made on account of the liability.

Another point might here be mentioned. In the case of a Sinking Fund set aside for the replacement of an asset it may happen that, before the Sinking Fund period has expired, some portion of the particular asset may be sold; also in connection with a fund to redeem debt, there may be a sale of some of the properties purchased out of the borrowed moneys. In either case, the customary procedure is to credit the

proceeds of such sales to the Sinking Fund Account, and then the annual contributions to the fund may be reduced accordingly. The calculation will be based on the allocation of the portion of the Sinking Fund still to be provided over the unexpired period of the fund.

## CHAPTER II

### RESERVES AND RESERVE FUNDS

#### DIFFERENCE BETWEEN A RESERVE AND A RESERVE FUND

A Reserve consists of a provision composed of amounts charged against Revenue (or Profit and Loss) Account and set aside for the purpose of covering an expected or known loss or liability, such as for bad and doubtful debts, discounts, disputed claims, rent or other items accrued to date but not yet due for payment, contingent liabilities, etc.

A Reserve is generally *specific*, e.g. Reserve for rent accrued, for probable bad debts, for depreciation, repairs and renewals, but it may be for a more *general* purpose, e.g. for contingent liabilities not specially named. It may be of an exact known amount, e.g. for rent, etc., accrued, or of an estimated amount, e.g. for bad and doubtful debts. A Reserve, if necessary, must be created even though no profits be made. It is a debit to Profit and Loss Account.

A Reserve Fund consists of a sum set aside out of divisible profits for the purpose of strengthening the financial position of an undertaking. It can only be created out of profits, and additions thereto can only be made by appropriating profits subsequently earned. A Reserve Fund represents profits not distributed but specially earmarked as "reserved." A Reserve Fund can only be in existence when there is an excess of assets over liabilities and capital, and only to the extent of such surplus. But a Reserve can exist even when the Balance Sheet exhibits a debit balance on Profit and Loss Account.

Reserves and Reserve Funds are similar in two respects, viz. both may be "disclosed" or "secret," and both may exist either with or without a corresponding investment in outside securities of such reserved amounts.

### RESERVES

It is sometimes stated that a Reserve is provided whenever a sum is charged against Revenue Account and credited to an asset account instead of to a Reserve Account. For example, if a debt be deemed bad, Bad Debts Account (and in turn Revenue Account) may be debited and the Debtor's Account credited. But the application of this procedure to Debtors' Accounts certainly cannot be considered sound accounting. It is true that the amount of profit available for distribution is reduced and the amount represented thereby retained in hand, but unless it is known for an absolute certainty that the debt (or debts) is bad it should not be written off in this manner, as by so doing it is extremely improbable that any demand will thereafter be made on the debtor for payment, and what might have turned out to be a good debt (a good asset) is wilfully destroyed. If, however, it is known that the debt is really bad, such a procedure does not amount to a Reserve but merely to a transfer to Profit and Loss Account of an asset that has ceased to be of value.

Another illustration of the creation of a Reserve in this manner will, however, show that a debit to Revenue Account, with a corresponding credit to an asset account, may be a good Reserve in the general sense, though there may be drawbacks in the method arising out of the non-establishment of the Reserve in name. For example, actual depreciation may be



written off by debiting Revenue Account and crediting the Asset Account instead of Reserve Account. Here the Balance Sheet exhibits a true state of affairs, the asset being shown at its real value and available profit being written down to the extent of the depreciation, thus avoiding an over distribution of profits. But this procedure is equivalent to maintaining the assets at full value, or the equivalent thereto, i.e. if the value of, say, machinery has depreciated by £1,000 during the year, and a thousand pounds of profit have been put beyond distribution by debiting Revenue Account, there remains £1,000 of cash in excess of normal working requirements, which, together with the reduced value of the machinery, keeps the total value of assets as before. If the cash is not required as additional working capital, consideration must be given to the best use to which it can be put. This may result in investment or other course, but whatever line be followed, one important point must be kept in mind, viz. that in the immediate or distant future sufficient money will be required to replace the asset which will have become valueless. If the money has been invested outside or retained in a separate banking account all will be well. But if it has been used as extra working capital or in the redemption of debentures, etc., there may be no cash available for the acquisition of new assets and a further issue of capital will be the only remedy. The following Balance Sheet illustrates this—

## BALANCE SHEET—31st DECEMBER, 1922

<i>Liabilities.</i>				<i>Assets.</i>			
	.	.	£		.	.	£
Capital	.	.	10,000	Machinery	.	.	3,000
Loans	.	.	3,000	Other Assets	.	.	10,000
			<u>£13,000</u>				<u>£13,000</u>

A year later the profits of the period which, before charging depreciation on machinery, amounted to, say, £2,000, have been distributed to the extent of £1,500, the remaining £500 (being the amount of depreciation on machinery) is debited to Profit and Loss Account and credited to Machinery Account. The Balance Sheet then is—

## BALANCE SHEET—31st DECEMBER, 1923.

<i>Liabilities.</i>		<i>Assets.</i>	
	£		£
Capital . . . .	10,000	Machinery . . . .	4,500
Loans . . . . .	3,000	Cash (in special account)	500
		Other Assets . . . .	8,000
	<u>£13,000</u>		<u>£13,000</u>

Assume the next five years' result of trading, etc., is similar—

## BALANCE SHEET

<i>Liabilities.</i>		<i>Assets.</i>	
	£		£
Capital . . . . .	10,000	Machinery . . . . .	Nil
Loans . . . . .	3,000	Cash (in special account)	3,000
		Other Assets . . . . .	10,000
	<u>£13,000</u>		<u>£13,000</u>

As cash is available new machinery, value £3,000, can be purchased with the cash in the special earmarked bank account or, if invested in gilt-edged securities, these can be converted into cash for the purpose. But if the £3,000 instead of being so earmarked had been used as additional working capital, it would have been mixed up in the "other assets," which would have stood at £13,000. The solvency of the firm would not, of course, be affected, but a financial embarrassment would be encountered in having compulsorily to convert into cash and pay out some of the floating balance used as working capital. Or, if the sum had not been required as working

capital but instead being invested or retained at the bank it had been used to discharge the loan of £3,000, the undertaking would be as solvent as ever, but the financial embarrassment would be even greater, because there would be no extra working capital in the form of a floating balance to realize. The only course open would be to raise new loans of £3,000 or to bring in more capital.

As has been stated already, a Reserve may be created to provide for known or probable losses arising out of Bad and Doubtful Debts ; Discounts ; Claims ; Rent, Audit, or other fees partly accrued but falling due for payment at a subsequent date ; Depreciation ; Repairs and Renewals. The last-named item, viz., Repairs and Renewals, is often made the object of a Reserve in order to equalize varying charges in respect of repairs and renewals as between successive years. Revenue Account is debited annually with the equalized charge and a Repairs and Renewals Reserve Account is credited. Actual repairs and renewals are charged against this Reserve Account as and when they occur. The principal object of dealing with such expenditure in this way is, as stated, viz., to equalize the annual charge against Profit and Loss Account, as if repairs and renewals are only brought into account as they occur, the earlier years of the life of an asset will necessitate little or no expenditure of this kind, though the periods in question will have the best use of the assets, while in subsequent years, when their utility is lessened, the expense will be greater.

It is better to show a Reserve created to cover loss by depreciation of specific assets as a deduction from the assets concerned rather than as a liability in stating the Balance Sheet. And where such a deduction is impracticable, by reason of its being general in its

application to all assets, as in cases where the double account system is in operation, the Reserve should be clearly earmarked for the purpose for which it is being accumulated. It is even quite competent to show the deduction on the assets side of the Balance Sheet when the double account system is adopted, by only a very slight, though valuable, modification.

Reserves for bad debts are calculated where possible on each debt separately and in other cases by way of percentage on the outstanding debtors at a rate based on past experience. The book-keeping entries are: debit Profit and Loss Account and credit Bad Debts Reserve Account. Debts actually bad are written off to this account and the balance of the account is generally raised to the agreed percentage on the outstanding debtors each period by further debits to Profit and Loss Account and credits to the Bad Debts Reserve Account.

**ILLUSTRATION.** The sundry debtors at 1st January, 1922, are £20,000, and at the 31st December, 1922, are £30,000. Reserve is made for doubtful debts at 5 per cent on outstanding debts. Debts proved bad and written off during 1922 were £900. The Bad Debts Reserve Account would be as follows—

Dr.		BAD DEBTS RESERVE ACCOUNT		Cr.	
1922. Dec. 31	To Bad Debts . . . . .	£ 900	1922. Jan. 1	By Balance brought forward (5% on £20,000) . . . . .	£ 1,000
" "	" Balance carried forward (5% on £30,000) . . . . .	1,500	Dec. 31	" Profit and Loss A/c . . . . .	1,400
		<u>£2,400</u>			<u>£2,400</u>
			1923. Jan. 1	" Balance . . . . .	1,500

### RESERVE FUNDS

A Reserve Fund has already been defined. It consists of undivided profits and can only exist to the

extent of the excess of assets over liabilities and capital. It is dependent on the continued existence in the undertaking of the profits out of which the fund was originally created.

One often sees it stated that a Reserve Fund is only "real" when represented by specific investments outside the business. That this is a misconceived notion is readily apparent from a simple illustration. As the existence of the fund is dependent on the existence of a surplus of assets, so long as such surplus still remains its exact form has nothing to do with the reality or otherwise of the fund.

It is, in many cases, a wise course to invest such funds, in which case the operation is in the nature of a Sinking Fund. If the investments be sold and the proceeds applied in redemption of loans, the existence of the Reserve Fund is in no way affected. The total assets are reduced when the cash is paid away by the same amount as the loans item on the liabilities side. But the Reserve Fund balance remains untouched. On the other hand, if the whole of the Reserve Fund be applied to reduce or extinguish a loss sustained by trading (*Dr. Reserve Fund, Cr. Profit and Loss Account*), the Reserve Fund ceases to exist, *but the outside investments remain unaffected*, even though they were supposed to represent the reality of the Reserve Fund.

That the advocates of the theory that a Reserve Fund is only real when invested outside the business mistake, in their views, is obvious from the above remarks.

Then, again, many persons overlook the fact that moneys allowed to remain on current account at the bank are investment of a kind.

*A misconceived notion* often met with is that a

Reserve Fund or Profits can be applied in the redemption of debentures, loans, stock, etc. Such a procedure is really a physical impossibility, as one will readily perceive on trying to formulate the book-keeping entries necessary to effect it. Loans, etc., Accounts stand with a credit balance. To reduce or write off this figure one must debit Loans Account, but what must one credit? If one credits Reserve Fund this fund is apparently increased, which is just the reverse of what one anticipated. Liabilities can only be discharged by effecting a corresponding reduction in assets. The assets, as shown by a Balance Sheet, may partly represent a Reserve Fund and partly a balance on Profit and Loss Account, while the remaining part accounts for Capital and Liabilities. But as such portion of the assets as corresponds to the Reserve Fund and Profit and Loss balance can only be applied, if available, i.e. if in liquid form, it does not necessarily follow that such Reserve Fund and profit can be used up to the hilt without seriously crippling the financial position. Such a procedure might easily deplete all working capital and necessitate a realization of floating and even fixed assets.

This illustrates the *advisability* (not necessity) of investing Reserve Funds and, in fact, any moneys that are specially earmarked for a purpose in order that the money may be available (by realization of the investments) when required.

True, the situation appears to be the same whether the appropriations to Reserve are retained in the business or not. For if invested, the money has had to go out of the firm at different dates, while, if not invested, it goes all at one date. But this only shows that where the funds are retained in the business, either there was not otherwise enough working capital

or that the amount of such retention is an obvious excess of liquid assets deposited at the bank or lying idle in an unremunerative way.

Nevertheless, the proof is quite evident that a Reserve Fund is as "real" as a Reserve Fund can be, whether invested outside or whether retained in the business. One practical illustration will not be out of place and will further prove the fallacy of the notion possessed by some accountants that a Reserve Fund can only exist when specific investments appear in representation thereof on the assets side of the Balance Sheet.

## BALANCE SHEET

<i>Liabilities.</i>		£	<i>Assets.</i>		£
Capital . . .		100,000	Fixed and Floating Assets . . .		105,000
Creditors . . .		5,000	Reserve Fund Investments (Government Stock) . . .		20,000
Reserve Fund . . .		20,000			
		<u>£125,000</u>			<u>£125,000</u>

Assume an opportunity arises for the firm to buy the premises it occupies, but which it only rents at present, and to raise the necessary money it sells the Government Stock for £20,000 and effects the purchase of the buildings for that sum. The only change in the appearance of the Balance Sheet is that the investments vanish and the Fixed and Floating Assets are worth £20,000 more than before. But the Reserve Fund most certainly remains untouched. If, however, the contention that the investments are the "real" Reserve Fund is sound, then, as the investments have been used, the Reserve Fund can no longer exist. But it does exist still in spite of these arguments.

As has already been stated, a Reserve Fund consists of undivided profits still in existence and specially set

aside, and the question naturally arises as to what shall be done with such excess of assets over liabilities. If not required as working capital it is undoubtedly a good policy to invest in outside securities. The advantages of this procedure are obvious, the least of which is not that which enables the undertaking readily to acquire a definite sum of money whenever the need may arise. There is, however, no more connection between the Reserve Fund and the outside investments (where such exist) representing it than there is between any other item on the liabilities side of the Balance Sheet and any other item on the assets side. The continued existence of the Reserve Fund depends solely upon the continued existence of a corresponding surplus of assets over liabilities.

### SECRET RESERVES

A Secret Reserve is one which actually exists but is not disclosed on the Balance Sheet. The secrecy may apply to a Reserve or to a Reserve Fund. Secret Reserves can only be formed in two ways—

- (1) By understating assets.
- (2) By overstating liabilities.

These mis-statements may, however, arise in various ways, e.g.—

(1) By writing excessive depreciation off assets and thus showing them below their actual value.

(2) By under-valuing assets or omitting assets from the Balance Sheet. Assets may have appreciated in value.

(3) By crediting excessive reserves for bad debts, discounts, contingent liabilities, or for fictitious liabilities.

(4) By charging capital expenditure to Revenue Account instead of to assets accounts.



**Are Secret Reserves Justified?** This is a question often debated, and one must admit that theoretically the answer is "No." For it is just as indefensible in theory to understate as to overstate the position. But from the practical point of view the practice, if not carried to excess, is certainly a prudent one. The origin of the custom probably arises by reason of the disinclination of shareholders to favour the formation of adequate Reserve Funds. They doubtless think it advisable to get hold of as much return from their investment as possible, based on the maxim that a bird in the hand is worth two in the bush. If carried to excess a so-called Secret Reserve really ceases to be secret. The obvious mis-statements in the Balance Sheet lead one to know of their existence. For instance, the example always quoted in text-books, viz., the omission by the Bank of England from its Balance Sheet of the value of its premises. The principal advantage claimed for Secret Reserves is the financial stability obtained, enabling extraordinary losses to be met out of such hidden surpluses without debiting Revenue Account, without reducing the dividend, and without shaking public confidence in the firm. While financial stability may be obtained equally well by means of an ordinary Reserve Fund, which may also be employed to equalize dividends, the application of such fund, to any considerable extent, if apparent, by material fluctuations in the amount of the Reserve Fund, is likely to have a disastrous effect upon the credit of the undertaking. It is, perhaps, strange, but true, that the employment of a Reserve Fund for the exact purpose for which it was created, namely, to give stability and so enable dividends to be paid in unprofitable periods, is almost invariably regarded as a sign of grave weakness. For

example, if the Bank of England suddenly brought into its Balance Sheet as assets its freehold premises, without increasing its Reserve Fund as shown by the liabilities side by a corresponding amount, suspicion would doubtless be aroused. There is little doubt that Secret Reserves can be justified if not excessive, if *bona fide*, and if the treatment is to the advantage of the firm generally.

### ADVANTAGES AND DISADVANTAGES OF SECRET RESERVES (SUMMARIZED)

**Advantages.** (1) Financial stability is promoted, and extraordinary losses may be met thereout without disclosure to the public and consequent shaking of confidence.

(2) Dividends may be equalized and violent fluctuations obviated.

(3) The interests of the undertaking are advanced. Big profits can be concealed from business rivals.

**Disadvantages.** (1) The Balance Sheet is not correctly stated.

(2) The Trading and Profit and Loss Account do not show the true profits.

(3) The shareholders are not accorded a full knowledge of the real state of affairs.

(4) The dividend declared may be quite different from the actual profit earned.

(5) They are dangerous resources, and can be used to conceal losses arising from bad management or reckless speculation.

(6) Profits may be manipulated in order to enable improper dealings in shares.

(7) Concealment of facts and manipulation of figures are bad in principle and may often work to the firm's detriment. Suspicions may be aroused which will

weaken or destroy confidence in the management much more than a policy of straightforward dealing.

(8) An understatement of assets may be disadvantageous in the event of a fire occurring and a claim being made on the insurance company.

(9) Secret Reserves may be used for securing control of allied firms.

(10) They may be employed in investments in or loans to undertakings in which directors are personally interested, in which case the application may not be in the interest of the proprietors of the business.

(11) They may be used in commissions or bribes to agents, customers, and others.

(12) Additional remuneration to directors and friends may be paid out of Secret Reserves.

### INVESTMENT OF RESERVE FUNDS

Though much has already been stated on the question of investment of Reserve Funds it is, perhaps, worth while, even at the expense of possible redundancy, to set out succinctly the pros and cons of the subject. Some accountants hold the contention that a Reserve Fund is not merely a surplus of assets over liabilities and capital, but must be represented by special investments, a surplus not so invested being termed "Reserve" or "Rest." Other equally important members of the profession are of the opinion that the term "Reserve Fund" is properly used for a surplus of assets whether invested or not. The main difference appears to be one of terminology. The important point and one that must be settled is really outside the question of merely individual taste, and concerns the problem as to whether the surplus shall be invested or not. And in determining this, one must consider—

- (a) The objects of the fund ; and
- (b) The advisability of investment in each particular case.

The objects of a Reserve Fund are—

- (1) To give stability to the concern.
- (2) To provide working capital by accumulating revenue.
- (3) To equalize dividends, taken one year with another.
- (4) To provide for unknown contingencies.

For purpose (1) it is undoubtedly advisable to invest outside the business, assuming, of course, a sufficiency of working capital is otherwise maintained. For purpose (2) it is essential that the money be not invested but retained in the business, the very object in creating the fund rendering this absolutely necessary. Purposes (3) and (4) will be served equally well whether the funds be invested or not, provided they are available when required. It is obvious that a Secret Reserve or Secret Reserve Fund cannot be invested outside, as it would then be no longer secret. Each particular case must be considered on its own merits. Where there is a surplus of cash it is most economical to invest, but it should be noticed that such an investment is the result of a surplus of *cash*, not of *profits*, and might possibly arise even where no Reserve Fund is in existence.

Investments outside are always an advantage, provided the firm can afford to invest, but it cannot afford if such a procedure would deprive it of a sufficiency of working capital, e.g. if a bank overdraft were in evidence it would be bad policy to increase it by investing in sound securities, the yield on which would be considerably less than the rates charged by the bank.

On the other hand, it would also be bad policy to invest available cash, representing a Reserve Fund, where the money could be employed more advantageously in or about the business, e.g. it might quite conceivably be more economical to pay off a mortgage on its premises than to invest in gilt-edged securities.

Where, however, the Reserve Fund is created for a specific purpose, such as the renewal of an asset or the repayment of a loan, the very circumstances demand that actual cash shall be available at a certain date, hence the advisability of investing outside.

The following Balance Sheets will illustrate the subject—

BALANCE SHEET (No. 1)

<i>Liabilities.</i>		<i>£</i>	<i>Assets.</i>		<i>£</i>
Capital	.	90,000	Sundry Assets	.	80,000
Reserve Fund	.	10,000	Another Asset	.	10,000
			Reserve Fund Invest-		
			ment	.	10,000
		<u>£100,000</u>			<u>£100,000</u>

Assume the "other asset" (£10,000) becomes valueless or entirely lost, the position would now appear—

BALANCE SHEET (No. 2)

<i>Liabilities.</i>		<i>£</i>	<i>Assets.</i>		<i>£</i>
Capital	.	90,000	Sundry Assets	.	80,000
			Reserve Fund Invest-		
			ment	.	10,000
		<u>£90,000</u>			<u>£90,000</u>

Now, instead of the sudden loss of the "other asset," assume the position as shown in Balance Sheet (No. 1), and that the investment be sold and the proceeds used to buy the premises the firm occupies,

but does not own, and the new Balance Sheet would appear—

## BALANCE SHEET (No. 3)

<i>Liabilities.</i>		£	<i>Assets.</i>		£
Capital	.	90,000	Sundry Assets: (i.e.		
Reserve Fund	.	10,000	£80,000 + £10,000		
			premises)	.	90,000
			Another Asset	.	10,000
		<u>£100,000</u>			<u>£100,000</u>

Balance Sheet (No. 2) shows that the Reserve Fund can be absorbed and the investment remain, proving that the existence of the fund is not assured by the investment, and Balance Sheet (No. 3) shows that the investment can be disposed of and the Reserve Fund still remain, proving that the existence of the fund is not dependent on the investment.

Though investment is recommended wherever possible and economical, no rule can be laid down that a Reserve Fund must or ought to be invested, but it is proved that the fund is no more secure whether invested or not, that the investment has no connection with the fund raised out of profits, and that, in many cases, it is quite obvious that the fund ought not to be invested.

No matter what individual taste likes to call a surplus of assets, whether Reserve, Rest, or Reserve Fund, the facts are always substantially the same, so what matters the title?

### RESERVES AND RESERVE FUNDS CONSISTING OF APPRECIATIONS OF ASSETS

Nearly all assets, fixed and floating, in possession a few years ago, have appreciated considerably in value. The accretion has had to be dealt with in one

of two ways—either the value has been written-up in the books and a like amount credited to a Reserve Fund, or the book figures have been allowed to remain, and incidentally form a Secret Reserve.

To facilitate a consideration of the subject it is most convenient to divide all the assets into two classes—capital (or fixed) assets, and revenue (or floating) assets.

### CAPITAL RESERVE FUNDS

Where it is deemed advisable to write-up the book value of capital assets to their new worth, the only reasonable (and probably only legal) way is to credit the increase to a specially earmarked Capital Reserve Fund, and not to the General Reserve Fund that is available for distribution as dividend. The reason for the necessity of keeping it separate from the General Reserve Fund is because an increase in the value of capital assets is certainly not a profit that can be distributed among shareholders of a company. Such a distribution is not reasonable, because the increase is not a profit arising out of trading, nor is it (and this is even more important) a *realized* profit; and, further, because it is not a regularly recurring gain. The possibility of a fall in prices might render a return to the original figures imperative. But if the rise has been carried to a special Reserve Fund, that fund can be drawn upon to restore the downward fluctuation if ever such a condition happens.

The legal position in cases such as these is not settled by specific legislation and can only be drawn from case-law. In *Foster v. The New Trinidad Lake Asphalt Co., Ltd.* (1902), it was held that appreciation of capital assets may be a proper case to treat as available for dividends, *provided it is a realized profit*,

i.e. only after their sale. Another case of a somewhat similar description and giving the same reasoning is that of *Lubbock v. British Bank of South America, Ltd.*

### REVENUE RESERVE FUNDS

Appreciation of revenue assets is rather different from that of fixed assets by reason of the temporary nature of the former. Yet in some respects the two are analogous. Capital assets are acquired for "permanent" retention and, consequently, the probability of any appreciation being realized is remote. But floating assets are held with a view to an early conversion into cash.

There can be little doubt that once substantiated the profit is available as dividend. But until actually made certain, it would be very imprudent to treat the advance as a profit. As a very early sale of floating assets is nearly always the object, appreciations automatically come into the accounts as profit. Where, however, at the close of a financial period it is, or has been, considered advisable to write-up the value of revenue assets, e.g. raw materials, completed and partly manufactured articles, the amount should be credited to a special Reserve Fund until the goods are sold. Then a transfer is reasonably permissible from such Reserve Fund to Profit and Loss Account in respect of the proportion sold.

In view of the many cases of this description that have recently arisen the position is interesting and important. When a time comes in which the market price of the goods falls, and the enhanced figure is no longer obtainable, the loss caused by the drop is one which is chargeable against the special Reserve Fund that was credited with the increase on the same articles.



Against such a procedure there seems to be no valid objection, either legal or logical, nor is it conceivable that any opposition could be made by a firm's auditors. But if the fall exceeds the corresponding rise, previously carried to the special Reserve Fund, then such excess cannot prudently be charged other than to current Profit and Loss Account.

## CHAPTER III

### DEPRECIATION

#### DEFINITION AND CONSIDERATIONS

DEPRECIATION is the shrinkage in value of an asset at a given date as compared with its value at a previous date, and may take place from wear and tear, obsolescence, displacement, or effluxion of time. ✓

It may be divided into two classes—

(a) Internal, i.e. arising from the operation of any cause natural or inherent to the asset itself, e.g. wear and tear in plant and machinery—in other words, through use or working.

(b) External, i.e. arising from the operation of forces apart from the asset itself, e.g. obsolescence or displacement in the case of plant and machinery; effluxion of time in the case of a lease; a fall in the market value of investments.

The aim in providing for depreciation and its charges to revenue is to spread over the life of the asset the actual expenditure for the initial cost, partial renewals and all repairs as equally as possible throughout the life. At no definite date, except the termination of the undertaking, will it be absolutely possible to do this, but the proper method will be the one which approaches nearest to this standard.

In arriving at the amount of depreciation the following factors should be considered—

(1) Life of the asset; (2) cost of it; (3) residual value; (4) chances of obsolescence; (5) extent of repairs and partial renewals during the life; and (6) probable cost of replacement when a new asset is required. ✕

The term "depreciation" is usually understood to convey permanent shrinkage in value, temporary shrinkage being termed "fluctuation." The term "wear and tear" signifies a shrinkage due to one cause, namely, "use."

### NECESSITY OF PROVIDING FOR DEPRECIATION

As assets are held for the purpose of earning revenue, it is clear that any shrinkage in their value, being a loss, should rightly be charged against the income before the true divisible profit can be ascertained.

If profits be divided to the utmost limit, without this gradual loss being provided for by the accumulation of a fund which, at the termination of the life of the assets, will be sufficient to provide new ones, the only means of replacing them will be by the issue of new capital.

✓ Unless provision be made for depreciation the Balance Sheet does not represent an exact survey of the state of affairs.

✓ It will thus be seen that to divide profits up to the hilt, without providing for depreciation, is equivalent to the returning of capital in the form of dividend.

Depreciation is provided for as a matter of financial prudence, the contention being that depreciation, taking place as it does irrespective of the results of the business, should be recorded in the books just as much as any other transaction, if those books are to show the true facts of the case.

The effect of providing for depreciation is fully explained and illustrated in the chapter on Reserves (*see* pages 19 to 23).

Of the factors needing consideration, when determining the amount of depreciation to be provided for, that relating to the probable cost of replacing the

asset, when a new one is required, is worthy of special attention.

If the expenditure on the acquisition of assets in replacement of old ones would probably be the same as the original cost all would be well so far as this phase of the matter is concerned. But in view of the abnormal conditions that have affected the purchasing power of money it happens, and shows every prospect of continuing for a long time to come, that almost invariably the cost of replacement, by an asset no better than its predecessor, is very much higher than the original cost. Consequently, though the writing-off (or providing for) depreciation on the actual cost will extinguish the assets from the books and will ensure the possession of a sum equivalent to the original cost, there will not be enough money to provide for the replacement of the assets by the purchase of new ones at the much enhanced prices. This is a point that should not escape attention and the matter arises in the form of the question—

*How must the additional cost of replacement of assets be provided for?*

If the capital value of assets for Balance Sheet purposes has been written-up to a figure approaching the present-day valuation (and a similar amount credited to a Capital Reserve Fund) the calculations of the depreciation provision will doubtless be made on the enhanced figure, and to some extent—though probably not sufficiently, unless the difference between the cost, less depreciation provision to date, and the increased value (assuming this latter to be equivalent to the cost of replacement) be written-off over the remaining period of life of the assets—the difficulty is overcome. And in these circumstances it matters not whether the amount written-off as depreciation at

any date be shown as a Depreciation Fund on the liabilities side of the Balance Sheet, or as a deduction from the asset.

X Another way of solving the problem, and one that is likely to meet with approval where capital assets have not been so written-up in value, is to establish a fund *quite distinct from, and in addition to, the ordinary old-basis depreciation provision* by debiting to Revenue Account and crediting to special Reserve Account such annual amounts as will, together with the old depreciation provision, be sufficient to acquire new assets.

A point not to be overlooked is that in cases where the value of fixed assets has not been increased for Balance Sheet purposes, the amount of the special fund so created must not be deducted from the asset figure in the Balance Sheet, even though the ordinary depreciation provision be so treated, as by so doing the actual value of assets would be grossly understated, and they would sooner or later be shown in the Balance Sheet as a minus quantity, though they possessed considerable value even on the old basis.

✓ The position with regard to enhanced values of floating assets and subsequent depreciation is treated in another part of the book (*see* pages 35 and 36).

### METHODS OF PROVIDING FOR DEPRECIATION

There are seven methods of providing for depreciation, viz.—

(1) The Equal Annual Instalment system (sometimes called the Fixed Instalment system).

X (2) The Reducing Instalment system.

X (3) The Depreciation, Repairs and Renewals Fund system.

(4) The Sinking Fund system (sometimes termed the Depreciation Fund system).

(5) The Annuity system.

(6) The Insurance Policy system.

(7) The Re-valuation system.

Each of these methods has its special application in certain circumstances and, consequently, advantages and disadvantages. Each system will now be considered in detail.

(1) **The Equal Annual Instalment System.** A fixed percentage of the original cost is charged to revenue each year so as to reduce the asset to nil or break-up value at the end of its life. Repairs and small renewals are charged to revenue as and when they occur. This method is not scientific nor convenient, inasmuch as separate calculations have to be made in respect of each addition. It takes no account of interest which the money invested in the asset might otherwise earn. This method is not generally adopted except, perhaps, in the case of *short* leaseholds and even here, if the amounts involved are considerable, the Annuity system (No. 5 described later) is better.

Another disadvantage, which one might construe into a reason for its lack of popularity, is the fact that each year's charge for depreciation, against profits, is equal. Though this seems fair, on first thought it is not so in effect, because the cost of repairs and small renewals is very light during the earlier years, entailing little or no debit to Revenue Account therefor, even though these years are receiving the benefit of the best period of the life of the asset, while the later years, when the plant is much worn and repairs are heavy, have to bear a greater burden, though they only have the benefit of well-worn and perhaps old-fashioned machinery.

This system is simple to work. The cost of the asset, less its residual value as scrap, is divided by the number of years of its life, the result being the annual charge for depreciation which will be debited to Depreciation Account (and, in turn, to Profit and Loss Account), while the credit may be either to the asset concerned or to a special Depreciation Fund. In either case, it is considered better to show the asset in the Balance Sheet at cost, less the provision for depreciation, rather than at cost with the depreciation provision as a separate item on the liabilities side.

**ILLUSTRATION.** (*Equal Annual Instalment Method.*)  
Plant cost £10,000 on the 1st January, 1922. Estimated life, 10 years. Break-up value, £1,000. Rate of depreciation, 10 per cent. (Amount to be written-off over 10 years = £9,000.)

PLANT ACCOUNT					
1922.			1922.		
Jan. 1	To Cash . . .	£ 10,000	Dec. 31	By Depreciation . .	900
			" "	" Balance c/d . .	9,100
		<u>10,000</u>			<u>10,000</u>
1923.			1923.		
Jan. 1	" Balance b/d . .	9,100	Dec. 31	" Depreciation . .	900
			" "	" Balance c/d . .	8,200
		<u>9,100</u>			<u>9,100</u>
1924.					
Jan. 1	" Balance b/d . .	8,200			

All additions to the plant during the ten years would have to be the subject of a separate calculation for depreciation purposes. If the additions were effected, say, two years after the original outlay, the question first to be raised is, will the additional plant last two years longer than the remainder or will the break-up date of both coincide? The answer will result in a further depreciation charge (i.e. in excess of the £900)

of either one-tenth or one-eighth of the cost of the additions, less residual value.

(2) **The Reducing Instalment System.** A fixed percentage of the diminishing value of the asset is charged to revenue annually, so as to reduce the asset to break-up value at the end of its life. Repairs and small renewals are also charged to revenue.

This method is frequently employed. It is very simple in operation, and the total annual charge to revenue in respect of depreciation, repairs, and partial renewals is more even than under method (1), for while depreciation is heavy in the early years, repairs will be lighter, the latter increasing as the former diminishes, whereas in (1) the annual charge for depreciation is constant while repairs will tend to increase.

It is not necessary to make separate calculations on additions to the assets during subsequent years as the percentage is always worked out upon the balance as shown by the asset account. Under this system it is impossible to write-off an asset exactly to nil but to its residual or break-up value. The length of time taken to write-down assets by this method is not always realized at first. An asset costing £1,000 depreciated at the rate of 10 per cent per annum would, under method No. 1, be fully written off at the end of ten years, but under the reducing instalment method a similar percentage written-off the diminishing balance, a balance of nearly £5 would remain at the end of fifty years.

**ILLUSTRATION.** (*Reducing Instalment System.*) Plant cost £10,000 on 1st January, 1922. Estimated life, 10 years. Break-up value, £1,000. Rate of depreciation (approximately) 15 per cent. (Amount to be written-off over 10 years = £9,000.) Additions, £2,000 on 1st January, 1924; conditions the same.



## PLANT ACCOUNT

1922.		£ s. d.	1922.		£ s. d.
Jan. 1	To Cash . .	10,000 - -	Dec. 31	By Depn. (15% on 10,000)	1,500 - -
			" "	" Balance c/d	8,500 - -
		<u>10,000 - -</u>			<u>10,000 - -</u>
1923.			1923.		
Jan. 1	" Balance b/d .	8,500 - -	Dec. 31	" Depn. (15% on 8,500)	1,275 - -
			" "	" Balance c/d	7,225 - -
		<u>8,500 - -</u>			<u>8,500 - -</u>
1924.			1924.		
Jan. 1	" Balance b/d .	7,225 - -	Dec. 31	" Depn. (15% on 7,225)	1,083 15 -
" "	" Cash (addi- tions)	2,000 - -	" "	" Balance c/d	7,841 5 -
		<u>9,225 - -</u>			<u>9,225 - -</u>
1925.					
Jan. 1	" Balance b/d .	7,841 5 -			

(3) Depreciation, Repairs, and Renewals System. In this method an estimate is made in advance to cover the cost of the asset, and the probable cost of partial renewals and repairs, which total, less the residual value of the asset, is divided by the estimated life, and thus the annual charge is arrived at. This method is recommended.

The principal object of this method is to equalize the annual charge against revenue to cover depreciation, repairs and renewals. It is obvious that under any of the other methods the total yearly debit to Profit and Loss Account is not consistent. Logically, repairs will always be lighter in the earlier years of the asset's life, when it is new and in perfect order, as regards both its working condition and its being the latest model. In its later life, repairs are heavy and its output inferior. To some extent the Reducing Instalment system tends to remedy the trouble but does not do so exactly. Another advantage of the Depreciation, Repairs, and Renewals Fund system arises inasmuch as it is not always easy to distinguish

exactly between repairs and small renewals. While repairs are always considered as upkeep and charged as revenue, there is a danger that small renewals may be added to capital expenditure where such a course is not justified. Expenditure on small renewals does not increase the capital value, but only keeps it in a working condition. Small renewals and ordinary working expenses are closely related and are both expenses of upkeep and, consequently, revenue charges, while depreciation is a shrinkage in the capital value of the asset that cannot be made good by repairs and small renewals. And while this is a capital loss it is recovered from revenue and spread over the life of the asset by a charge for depreciation.

In the earlier years the Depreciation, Repairs and Renewals Fund will carry a considerable credit balance, which will be drawn upon in excess of the annual transfer to such account in later years. Thus the annual charge to Revenue Account for depreciation, repairs and renewals is constant and is credited to the account of that name. All actual repairs and upkeep renewals are charged to this account and at the end of the working life of the asset the Depreciation, Repairs and Renewals Fund should have a credit balance which, with the break-up value of the old asset, will be big enough to effect the purchase of a new asset of the same value as the original one.

It may happen that this account will become in debit temporarily, owing to excessive expenditure in any one period. If this is likely to be recouped during subsequent years it need not cause anxiety but, if not, it should be written-off to Revenue Account and not carried forward. In all cases a re-valuation of the asset periodically is advisable in order that the annual amount set aside may be revised if necessary.

**ILLUSTRATION.** (*Depreciation, Repairs and Renewals Fund System.*) Plant cost £10,000 on 1st January, 1922. Estimated life, 10 years. Break-up value, £1,000. (Amount to be written-off over 10 years, £9,000.) Estimated total expenditure on repairs and renewals during the 10 years, £3,000. Total average annual charge to revenue, £1,200 = 12 per cent of cost. Additions, 1st January, 1924, £2,000.

#### PLANT ACCOUNT

1922. Jan. 1	To Cash . . . .	£ 10,000	
1924. Jan. 1	" " (additions) .	2,000	
		<u>£12,000</u>	

#### DEPRECIATION, REPAIRS AND RENEWALS FUND ACCOUNT

1922. Dec. 31	To Repairs & Renewals	£ 50	1922. Dec. 31	By P. & L. A/c (12% on £10,000)	£ 1,200
" "	" Balance c/d . .	1,150			<u>1,200</u>
		<u>£1,200</u>			
1923. Dec. 23	" Repairs & Renewals	100	1923. Jan. 1	" Balance b/d . .	1,150
" "	" Balance c/d . .	2,250	Dec. 31	" P. & L. A/c (12% on £10,000)	1,200
		<u>£2,350</u>			<u>£2,350</u>
1924. Dec. 23	" Repairs & Renewals	200	1924. Jan. 1	" Balance b/d . .	2,250
" "	" Balance c/d . .	3,490	Dec. 31	" P. & L. A/c (12% on £12,000)	1,440
		<u>£3,690</u>			<u>£3,690</u>
			1925. Jan. 1	" Balance b/d . .	3,490

At the end of ten years if calculations have been approximately correct, the amounts debited to the Depreciation, Repairs and Renewals Fund Account will have totalled £3,000, plus eight years' charges on the £2,000 additions, say, £350. So if the total debits are approximately £3,000 to £3,400, calculations have been on a good basis. At intermediate dates during

the period tests may be made to see whether or not the percentage charged to revenue and credited to the fund (in this case 12 per cent) needs revision.

(4) **The Sinking Fund (or Depreciation Fund) System.** In this method an equal amount is debited to revenue each year, and credited to a Sinking Fund or Depreciation Fund Account. This amount is generally and advisedly invested outside the business in gilt-edged securities, and allowed to accumulate at compound interest so as to produce the required amount at the completion of a definite number of years. This is an excellent system, especially where the assets are few but large, as it avoids any disturbance of the financial position, such as might occur if large sums had to be withdrawn from the business at any particular moment. The asset is allowed to stand in the accounts at its original cost, the provision for depreciation standing to the credit of the Sinking Fund or Depreciation Fund Account, and shown either on the liabilities side of the Balance Sheet (specifically earmarked) or as a deduction from the asset.

The observations in the chapters relating to Sinking Funds and Investment of Reserve Funds apply here.

**ILLUSTRATION.** (*Sinking Fund (or Depreciation Fund) System*). Plant cost £11,000 on 1st January, 1922. Estimated life, 10 years. Break-up value, £1,000. Amount to be accumulated by the Sinking Fund or Depreciation Fund, £10,000 in 10 years. The annual contribution to be debited to revenue and credited to this fund will be found by the method described in the chapter on Sinking Funds and, in this case, is £795 0s. 11d.

The Ledger Accounts will be as follows—

Each year Profit and Loss Account will be debited and Sinking Fund credited with £795 0s. 11d.

# 48      SINKING FUNDS, RESERVE FUNDS, ETC.

Each year Investment Account will be debited and Cash Account credited with £795 0s. 11d.

Each year (after the first) Cash Account will be debited and Sinking Fund credited *and* Investment Account debited and Cash Account credited with the interest earned during the year on the investments.

## PLANT ACCOUNT

1922. Jan. 1	To Cash	. . .	<u>£11,000</u>
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## SINKING FUND (OR DEPRECIATION FUND) ACCOUNT

1922. Dec. 31	To Balance c/d	£ 795 - 11	1922. Dec. 31	By P. & L. A/c (instalment for year)	£ 795 - 11
1923. Dec. 31	„ Balance c/d	1,629 16 10	1923. Jan. 1	„ Balance b/d	795 - 11
			Dec. 31	„ Cash (interest on £795-0-11)	39 15 -
			„ „	„ P. & L. A/c (instalment for year)	795 - 11
		<u>£1,629 16 10</u>			<u>£1,629 16 10</u>
1924. Dec. 31	„ Balance c/d	2,506 7 7	1924. Jan. 1	„ Balance b/d	1,629 16 10
			Dec. 31	„ Cash (interest on £1,629-16-10)	81 9 10
			„ „	„ P. & L. A/c (instalment for year)	795 - 11
		<u>£2,506 7 7</u>			<u>£2,506 7 7</u>
1925. Dec. 31	„ Balance c/d	10,000 - -	1925. Jan. 1	„ Balance b/d	2,506 7 7
			Dec. 31	„ Balance b/d	8,766 12 5
				„ Cash (interest on £8,766-12-5)	438 6 8
			„ „	„ P. & L. A/c (instalment for year)	795 - 11
		<u>£10,000 - -</u>			<u>£10,000 - -</u>
			Dec. 31	„ Balance b/d	10,000 - -

## INVESTMENT ACCOUNT

1922. Dec. 31	To Cash . . .	£ 795 s. d. - 11	1922. Dec. 31	By Balance c/d . .	£ 795 s. d. - 11
1923. Jan. 1	" Balance b/d .	795 - 11	1923. Dec. 31	" Balance c/d .	1,629 16 10
Dec. 31	" Cash (Interest)	39 15 -			
" "	" " (Instal- ment) .	795 - 11			
		<u>£1,629 16 10</u>			<u>£1,629 16 10</u>
1924. Jan. 1	" Balance b/d .	1,629 16 10			
1931. Jan. 1	" Balance b/d .	8,766 12 5	1931. Dec. 31	" Balance c/d .	10,000 - -
Dec. 31	" Cash (Interest)	438 6 8			
" "	" " (Instal- ment) .	795 - 11			
		<u>£10,000 - -</u>			<u>£10,000 - -</u>
1931. Dec. 31	" Balance b/d .	10,000 - -			

It will be observed that the Sinking Fund or Depreciation Fund now stands with a balance of £10,000, while there is a corresponding investment in outside securities of a similar figure. These will be realized and the plant will be sold for its scrap value, viz., £1,000, and a new asset equivalent to the old one in value may be purchased without the least disturbance of the financial position of the undertaking.

The balances just before and immediately after these last transactions will be as under—

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Capital . . .	29,000	Sundry Assets . . .	20,000
Sundry Liabilities . . .	2,000	Plant (at cost 10 years ago, now only worth £1,000 as scrap) . . .	11,000
Depreciation Fund . . .	10,000	Depreciation Fund Investments . . .	10,000
	<u>£41,000</u>		<u>£41,000</u>

## 50 SINKING FUNDS, RESERVE FUNDS, ETC.

Realize the investments and the old plant and close the Plant Account and the Depreciation Fund Account by cross transfer. The following are the book-keeping entries—

		£	£
Cash	Dr.	11,000	
To Plant	Cr.		1,000
„ Investments	Cr.		10,000
Depreciation Fund Account	Dr.	10,000	
To Plant Account	Cr.		10,000

### BALANCE SHEET

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Capital	29,000	Sundry Assets	20,000
Sundry Liabilities	2,000	Cash	11,000
	<u>£31,000</u>		<u>£31,000</u>

Buy a new asset and the position is—

### BALANCE SHEET

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Capital	29,000	Sundry Assets	20,000
Sundry Liabilities	2,000	New Plant (at cost)	11,000
	<u>£31,000</u>		<u>£31,000</u>

In the above illustration, for the sake of simplicity in treatment, investments have been taken at par and the interest on investment has been treated as though it were received gross. In practice, income tax at the appropriate rate would be deducted before receipt, resulting in a considerable shortage in the Sinking Fund (or Depreciation Fund) at the end of the period. This would be remedied by charging this loss by tax annually against revenue and crediting it to the

Sinking Fund to make up the deficiency in the latter. Further complications would arise if the investments were not at par, resulting in a shortage or a surplus on the fund. This matter has been dealt with in the chapter on Sinking Funds.

Additions to plant at subsequent dates need to be made the subject of separate treatment.

(5) **The Annuity System.** This method differs from the equal annual instalment system inasmuch as the asset is considered to earn a fixed rate of interest. The annual amount is constant and is calculated so as to reduce the asset to nil or to residual value, at the end of its life, after taking into consideration the interest on the diminishing value. The Revenue Account is debited with the fixed annual charge and is credited with the interest claimed to be earned. Thus the net annual charge against the profits is an increasing one as the interest credited to revenue decreases annually. The asset account is credited with the fixed annual charge. This is considered to be the most scientific method, and is particularly suitable when investment is not desired outside the business but where the money is retained in the business as additional working capital. It is the most complicated and difficult method to understand. It is only applicable in case of such assets as leases or freehold buildings where no additions are to be made to the asset during its life. In practice it cannot conveniently be applied to plant and machinery and similar assets.

**ILLUSTRATION.** (*Annuity System.*) Lease costing £10,000 for term of 10 years. Interest calculated at 5 per cent per annum. Annual charge to revenue, £1,295 0s. 11d.



## LEASE ACCOUNT

1922.			1922.		
Jan. 1	To Cash	£ 10,000 - -	Dec. 31	By Depreciation	£ 1,295 - 11
Dec. 31	" Interest (5% on £10,000)	500 - -	" "	" Balance c/d	8,204 19 1
		<u>£10,500 - -</u>			<u>£10,500 - -</u>
1923.			1923.		
Jan. 1	" Balance b/d	9,204 19 1	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £9,204-19-1)	460 4 11	" "	" Balance c/d	8,370 3 1
		<u>£9,665 4 -</u>			<u>£9,665 4 -</u>
1924.			1924.		
Jan. 1	" Balance b/d	8,370 3 1	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £8,370-3-1)	418 10 2	" "	" Balance c/d	7,493 12 4
		<u>£8,788 13 3</u>			<u>£8,788 13 3</u>
1925.			1925.		
Jan. 1	" Balance b/d	7,943 12 4	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £7,943-12-4)	374 13 7	" "	" Balance c/d	6,573 5 -
		<u>£7,968 5 11</u>			<u>£7,968 5 11</u>
1926.			1926.		
Jan. 1	" Balance b/d	6,573 5 -	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £6,573-5-0)	328 13 3	" "	" Balance c/d	5,606 17 4
		<u>£6,901 18 3</u>			<u>£6,901 18 3</u>
1927.			1927.		
Jan. 1	" Balance b/d	5,606 17 4	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £5,606-17-4)	280 6 10	" "	" Balance c/d	4,592 3 3
		<u>£5,887 4 2</u>			<u>£5,887 4 2</u>
1928.			1928.		
Jan. 1	" Balance b/d	4,592 3 3	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £4,592-3-3)	229 12 2	" "	" Balance c/d	3,526 14 6
		<u>£4,821 15 5</u>			<u>£4,821 15 5</u>
1929.			1929.		
Jan. 1	" Balance b/d	3,526 14 6	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £3,526-14-6)	176 6 9	" "	" Balance c/d	2,408 - 4
		<u>£3,703 1 3</u>			<u>£3,703 1 3</u>
1930.			1930.		
Jan. 1	" Balance b/d	2,408 - 4	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £2,408-0-4)	120 8 -	" "	" Balance c/d	1,233 7 5
		<u>£2,528 8 4</u>			<u>£2,528 8 4</u>
1931.			1931.		
Jan. 1	" Balance b/d	1,233 7 5	Dec. 31	" Depreciation	1,295 - 11
Dec. 31	" Int. (5% on £1,233-7-5)	61 13 6			
		<u>£1,295 - 11</u>			<u>£1,295 - 11</u>

The net charge to each year's Profit and Loss Account is as follows—

	Depreciation (debit to P. & L. A/c).			Interest (credit to P. & L. A/c).			Net debit to P. & L. A/c.		
	£	s.	d.	£	s.	d.	£	s.	d.
1922 .	1,295	—	11	500	—	—	795	—	11
1923 .	1,295	—	11	460	4	11	834	16	—
1924 .	1,295	—	11	418	10	2	876	10	9
1925 .	1,925	—	11	374	13	7	920	7	4
1926 .	1,925	—	11	328	13	3	966	7	8
1927 .	1,925	—	11	280	6	10	1,014	14	1
1928 .	1,925	—	11	229	12	2	1,065	8	9
1929 .	1,925	—	11	176	6	9	1,118	14	2
1930 .	1,295	—	11	120	8	—	1,174	12	11
1931 .	1,295	—	11	61	13	6	1,233	7	5
							£10,000	—	—

From the above figures it will be seen that the net annual charge is compensated by the fact that as the accumulations are retained in the business as extra working capital, the amount of such additional capital correspondingly increases and will be earning revenue. Now, if money is worth 5 per cent as working capital the net annual charge is exactly equal throughout, for as the interest on the lease decreases the interest on the accumulated fund increases by a like amount. If the method of writing-off adopted were the equal annual instalment system the actual annual charge for depreciation would be £1,000, but after eight years £8,000, and nine years £9,000, would have accumulated, the benefit of the earning of which would all go to these latter years, while the charge would be exactly the same as in the early years, namely, £1,000. Hence the truth of the claim that the annuity system is the most scientific method of dealing with depreciation.

(6) **The Insurance Policy System.** This system is that whereby an endowment policy is taken out for

the life of the asset so as to produce the amount required at the end of the particular period. This is similar to the Sinking Fund system (No. 4), except that the cash taken out of the business is paid by way of premium to the insurance company instead of being invested in gilt-edged securities. This obviates the trouble of finding suitable investments, and there is no risk of loss on realization of such investments.

This method is quite popular now insurance companies give such favourable terms. The slightly lower interest than is obtained by investing in gilt-edged securities is compensated by the absence of risk of loss on realization. The insurance company guarantees the exact amount on a given date. The treatment in the books is similar in most respects to that obtaining under the Sinking Fund system. The debit to Profit and Loss Account is the amount of the premium and is the year's charge for depreciation. The credit entry is made in a Depreciation Fund Account. When the premium is paid the amount is debited to a Policy Account and credited to Cash Account. When the policy matures cash (received) is debited and Policy Account credited. As the sum received from the insurance company is greater than the amount of premiums paid (because of interest added by the company), the Policy Account will have a credit balance. This should be transferred to the credit of the Depreciation Fund Account, which account will now equal the total sum required to acquire a new asset. Cash is now available for the purchase of a new asset, the old asset being written-off to the Depreciation Fund Account.

Until the end of the period the asset account (at cost) and the Policy Account will appear on the assets side of the Balance Sheet, while the Depreciation

Fund Account figures will be shown on the liabilities side.

Some accountants contend that the Policy Account should be maintained at surrender value, which is generally about 92 per cent of the amount of premiums paid (except the first premium), plus compound interest at about 3 per cent per annum. At first this may appear to be a prudent course, but there is no really good reason for it. The value of the policy to an outsider is certainly the surrender value, but the true value is its worth to the undertaking, and there seems no more reason why the figure should be understated in the early years than there does in understating the value of an asset which has cost a firm a certain amount (and would cost the same again to replace it) but which would, if realized, only produce a smaller figure. If the business is a continuing one, the criterion seems to be what is its worth to this firm taking all things into consideration, and this figure should not be exceeded in stating the value for Balance Sheet purposes. The position is analogous to the purchase of a particular asset at a price ex-works (a long distance away) and having paid freight, carriage, cartage, etc., contending that such delivery charges must not be debited to the asset account because if re-sold the asset would only fetch the works price (or less). But why, in view of the fact that if the goods had been bought carriage paid and fixed on the job there would have been no question about charging to Capital Account the total bill of the suppliers, including delivery and fixing?

If, however, one must maintain the Policy Account at surrender value, such value being in the early years less than the premiums paid, an adjusting entry has to be made debiting Depreciation Fund Account

and crediting Policy Account and, in later years, the entry will be the reverse. Each year then necessitates an adjustment between Depreciation Fund Account and Policy Account, in order that the latter shall appear with such a balance as represents the amount the insurance company would pay were the policy to be prematurely cancelled.

ILLUSTRATION. (*Insurance Policy System.*) Plant cost £11,000, 1st January, 1922. Estimated life, 10 years. Break-up value, £1,000. Amount to be provided by the Insurance Policy in 10 years, £10,000. Premium to insurance company, £820 annually.

## DEPRECIATION FUND ACCOUNT

31 Dec., 1931.	To Old Asset A/c	£	s.	d.	31 Dec., 1931.	By P. & L. A/c	£	s.	d.
		10,000	-	-	1922		847	1	8
					1923	" "	847	1	8
					1924	" "	847	1	8
					1925	" "	847	1	8
					1926	" "	847	1	8
					1927	" "	847	1	8
					1928	" "	847	1	8
					1929	" "	847	1	8
					1930	" "	847	1	8
					1931	" "	847	1	8
					1931	" Policy A/c	1,529	3	4
		<u>£10,000</u>	-	-			<u>£10,000</u>	-	-

## POLICY ACCOUNT

31 Dec., 1931.	To Cash	£	s.	d.	31 Dec., 1931.	By Cash	£	s.	d.
1922		847	1	8					
1923		847	1	8					
1924		847	1	8					
1925		847	1	8					
1926		847	1	8					
1927		847	1	8					
1928		847	1	8					
1929		847	1	8					
1930		847	1	8					
1931		847	1	8					
1931	" Policy A/c	1,529	3	4					
		<u>£10,000</u>	-	-			<u>£10,000</u>	-	-

(7) The Re-valuation Method. In this case a valuation is obtained and the difference between the valuation and the previous figure is debited to Profit

and Loss Account. This method is applied chiefly to such cases as loose tools, live-stock, patents, copyrights, trade marks, patterns, models, moulds, packages, corks, bottles, horses, harness, and investments. If the result of valuation shows an appreciation the increase is debited to the assets and credited to Profit and Loss Account. The most probable cause of the rise in value is through charging additions (in the shape of materials and wages) to Revenue Account instead of to Capital Account. In this case the term "appreciation" is completely wrong. It should be "additions to assets." And it is, of course, quite sound to credit such item to Profit and Loss Account and to debit the assets. But where the increase is real appreciation arising in consequence of enhanced market prices, the difference should be credited to a special Reserve Account. It should not be treated as profit, because the rise may only be temporary. It is not a revenue profit but a capital profit and, further, it is not a realized profit and it is not prudent to distribute as dividends even revenue profits that are on paper only. They should be realized first.

On first thought the re-valuation system seems ideal, and certainly the method that will ensure absolute accuracy in the Balance Sheet valuations and in the charges to Profit and Loss Account, no matter whether the assets in question are of the class named above or of any other description. But there are difficulties in arriving at an accurate valuation at very frequent intervals, and objections to the system, by reason of the disparity in the amounts written-off as depreciation, one year with another, though the assets are rendering virtually the same service. The reduction or increase in market value of most things does not correspond with the true depreciation. And the fact must not

be overlooked that the value of capital assets is the value to the particular firm in question as a continuing concern and not merely the price they would fetch if sold on the open market.

The method is confined almost exclusively to such classes of assets as were first referred to, and in the case of loose tools and small plant an alternate way of effecting the same principle is to pass the values at the opening and closing periods through the Revenue Account in the same way as stocks of goods on hand. For this class of asset and, indeed, cases where there are a great number of individual items, many of which have working lives of varying periods, it is, perhaps, the most accurate method to adopt. This system is illustrated by the following specimen accounts—

#### LOOSE TOOLS, ETC., ACCOUNT

1922.			1922.		
Jan. 1	To Balance b/f (being value of loose tools, etc., in hand at this date)	£ 1,734	Feb. 16	By Cash (sale of old tools, etc.)	£ 22
" 23	" Cash (repairs)	45	Nov. 8	" Ditto	19
Mar. 2	" " (renewals)	30	Dec. 31	" Profit and Loss A/c	266
" 31	" " (additions)	10		" Balance c/f (being value of tools etc., in hand at this date)	1,610
July 31	" " (repairs)	17			
Sep. 28	" " (additions)	27			
Dec. 4	" " (renewals)	54			
		<u>£1,917</u>			<u>£1,917</u>
1923.					
Jan. 1	" Balance b/f	1,610			

The balance carried forward represents the valuation of the loose tools, etc., at the end of the year; the amount written-off to Profit and Loss Account is merely the difference left on the account after the valuation has been credited and represents the year's charge for repairs, small renewals, and depreciation of the loose tools, etc.

**Comparison of Methods of Writing-off Depreciation.**  
(So far as the annual sum and the total sum charged

are concerned.) Amount of depreciation written-off over 10 years = £10,000.

System.	Annual Charge to P. & L. A/c.	Total Charge to P. & L. A/c.	Per Cent.
Equal Annual Instalment .	£ 1,000 - -	£ 10,000 - -	100-00
Sinking Fund (or Depreci- ation Fund) . . . .	795 - 11	7,950 9 2	79-50
Annuity . . . .	from 795 - 11 (1st Year) to 1,233 7 5 (10th Year)	10,000 - -	100-00
Insurance Policy . . .	847 1 8	8,470 16 8	84-71

### REPAIRS EQUALIZATION FUND

The cost of repairs and small renewals must always be charged against revenue, and where the total expenditure in this connection is liable to fluctuate considerably from year to year, a good plan is to establish a "Repairs Equalization Fund," where the method of providing for depreciation does not cover such expenditure. Where such a fund is created an estimate is made of the average annual charge for repairs, renewals, etc., based on past experience or on expert opinion. This average figure is debited annually to Profit and Loss Account and credited to the Repairs Equalization Fund, the balance of which account is carried forward and shown in the Balance Sheet. As repairs, renewals, etc., become necessary they are charged to this equalization fund. By this system the charge to Profit and Loss Account is equal each year and violent fluctuations are avoided. Periodically it is necessary to see if the fund is adequate and, if required, to readjust the annual charge.

### LEGAL POSITION AS TO THE NECESSITY FOR THE PROVISION FOR DEPRECIATION

This is rather outside the scope of this work but a brief remark will not be out of place.

In the case of private enterprise, i.e. one-man firms



and partnerships, there is, of course, no *legal* necessity to provide for depreciation. Nor is there any legal obligation in the case of local authorities. Consequently the observations can only affect the case of limited liability companies. In the consideration of the matter it is most convenient to divide the subject between depreciation of capital assets, i.e. fixed or wasting assets, and depreciation of revenue or floating assets. Lord Justice Romer stated (in *Bolton v. The Natal Land and Colonization Co., Ltd.*) that it was "not correct" in estimating the profits of a year to take into account the increase or decrease in the value of capital assets of the company. A similar contention, that it might not be necessary for a company to provide in that year's accounts for the whole of the loss caused by shrinkage in intrinsic value of the whole or a portion of its assets is shown in numerous cases, e.g.—

In re *Lee v. Neuchatel Asphalte Co., Ltd.*, where the company was allowed by its articles to distribute profits arrived at before making good depreciation of fixed assets, an appeal for an injunction against this was refused.

In re *Verner v. General and Commercial Investment Trust, Ltd.*, an injunction to restrain the company from paying a proposed dividend out of current profits on the ground that the capital was not intact, was refused because the company was solvent and acting within its articles.

In re *Bolton v. Natal Land and Colonization Co., Ltd.*, it was held that a company may declare a dividend out of current profits without being obliged to show all its capital intact.

The position may be summarized thus—

Depreciation on "Fixed" and "Wasting" assets

need not necessarily be made good before payment of dividends ; but

Depreciation on " Floating " assets must be made good before payment of dividends.

### RATES OF DEPRECIATION

The rate at which depreciation provision shall be charged and the system of doing it must necessarily be considered on the particular merits of each case. Only a general idea can be given, and that is all the remarks immediately following this purport to be. It must be remembered that what is charged as depreciation is not necessarily the figure allowed by the Inland Revenue Authorities and, consequently, the book figure of profit has to be adjusted in accordance with their allowances for wear and tear or depreciation.

Following the general outline of suggested rates, is given the schedule of agreed normal rates of depreciation for income tax purposes by the Board of Inland Revenue with the representatives of various industries.

### SUGGESTED RATES FOR VARIOUS ASSETS

**FREEHOLD LAND.** None.

**FREEHOLD PREMISES.** Write off over 50-150 years, according to materials and workmanship.

**LEASEHOLD LAND AND BUILDINGS.** Spread over the period of the lease, not omitting the possible liability to heavy claim for dilapidations at the termination of the lease.

**GOODWILL.** None.

**HORSES.** 15-25 per cent on outlay or on a re-valuation basis.

**INVESTMENTS.** None if in respect of a Reserve Fund, but if a reserve for a specific purpose and the

fluctuation is not merely a temporary one, the actual decrease as per market value should be written off.

**MACHINERY.** According to the nature of it, say, on an average, in addition to repairs and partial renewals,  $7\frac{1}{2}$ –15 per cent on the Reducing Instalment system.

**PLANT.** *Boilers*—10–15 per cent on outlay. *Loose Tools*—According to re-valuation. *Other Tools*—5–10 per cent on outlay, occasional re-valuation.

### DEPRECIATION RATES FOR INCOME TAX

The following rates of depreciation have been agreed by the Board of Inland Revenue with representatives of the various industries, subject to the concurrence of the respective bodies of Income Tax Commissioners—

#### SCHEDULE OF AGREED NORMAL RATES OF DEPRECIATION

Industry, etc.	Rate per Cent.	Prime Cost or Written-down Value.	Nature of Plant.
Blast Furnace Plant and Machinery	6	Written-down Value	Plant and machinery generally.
Bleaching and Finishing, Dyeing and Finishing	$7\frac{1}{2}$	Written-down Value	Plant and machinery generally.
Book Binding	5 $7\frac{1}{2}$	Written-down Value " "	Engines, boilers, and shafting. General binding machinery.
Brick Making	5 $7\frac{1}{2}$	Written-down Value " "	Steam engines, boilers, shafting, and mixing and brick making machines. Electrical plant, i.e. dynamos, motors, and transformers, etc., and crushing and grinding plant.
Chemical Industry	15 $7\frac{1}{2}$ $7\frac{1}{2}$ 5	Written-down Value " " " " " "	Sulphuric acid plant. Chemical plant, other than sulphuric acid plant. Electrical plant. Other plant.
Colour, Paint and Varnish Manufacturing Machinery	5 $7\frac{1}{2}$ 20	Written-down Value " " " "	Engines, boilers, shafting, and storage tanks. General plant and machinery, including machinery and electric motors. Motor lorries and motor tractors.

SCHEDULE OF AGREED NORMAL RATES OF DEPRECIATION—*contd.*

Industry, etc.	Rate per Cent.	Prime Cost or Written-down Value.	Nature of Plant.
Electric Furnaces and Plant, and Machinery used in connection therewith	12½	Written-down Value (after deducting all writing-off allowances)	All parts of the furnace, including transformers, switch-gear, high and low tension cable connections, furnaces, tilting gear and regulators, but not to foundations, buildings, cranes, buckets, or any shop tools or equipment. <i>Note.</i> —Rate to be re-considered at end of two years from 28th February, 1920.
Electric Light Undertakings	3 5	Written-down Value " "	Cables. Plant and machinery.
Envelope Making Machinery	5 7½ 20	Written-down Value " " " "	Steam-power plant and shafting. Electrical power plant, including dynamos and electric motors, and on process plant. Motor lorries and motor vans.
Flax Spinning and Linen Weaving (Ireland)	7½	Written-down Value	Machinery and plant (except accessory plant, such as pirns, pirn cages, spools, belting, driving ropes, damask cards, designs, patterns, models, furniture and fixtures).
Flock Manufacturing	6	Written-down Value	Plant and machinery generally.
Flour Milling	5 7½	Written-down Value " "	Engines, boilers, and main shafting. Other machinery.
Gas Undertakings, other than those owned by municipal or other public authorities	3 10	Written-down Value " "	Gas holders. Meters, cookers, and gas fires.
Handkerchief and Embroidery Manufacturing	5 10	Written-down Value " "	Mixed plant (engines, boilers, shafting and gearing, and motors). Stitching machines.
Hem-stitching	5 10	Written-down Value " "	Mixed plant (engines, boilers, shafting and gearing, and motors). Hem-stitching machinery.
Hosiery Manufacturing	5 10	Written-down Value " "	Engines, boilers, and shafting. Process plant.
Hosiery Needle Making	5 7½ 10	Written-down Value " " " "	Steam and gas engines, boilers, and shafting. Electric motors. Manufacturing machinery.
Lace and Embroidery and Muslin Manufacturing	7½	Written-down Value	Plant and machinery.
Ladies' and Children's Clothing	5 7½ 10	Written-down Value " " " "	Engines, boilers, and shafting. Electric motors. General process plant.

SCHEDULE OF AGREED NORMAL RATES OF DEPRECIATION—*contd.*

Industry, etc.	Rate per Cent.	Prime Cost or Written-down Value.	Nature of Plant.
Linoleum and Floor Cloth Manufacturing	5 7½ 10	Written-down Value " " " "	Engines, boilers, and shafting. Other plant and machinery. Diesel engines.
Motor Omnibuses	20	Written-down Value	Motor omnibuses.  <i>Note.</i> —(a) The rate of 20 per cent is to be re-considered at the expiration of five years, commencing with 1920-21; (b) this rate does not apply to commercial motor vehicles.
Motor Pantehnicons and Lorries	20	Written-down Value	Motor pantehnicons and lorries.  <i>Note.</i> —The rate of 20 per cent does not extend to horse-drawn pantehnicons and lorries, or to "lift" pantehnicons which are not a fixed portion of a motor.
Nail Making	5	Written-down Value	All plant and machinery.
Needles and Fishing Tackle	5 6 7½	Written-down Value " " " "	Engines, boilers, and shafting. Crochet, fishing hook and rod-making machinery. Electric motors and needle making machinery.
Newspaper Printing	5 7½ 10	Written-down Value " " " "	Engines, boilers, and shafting. Printing and binding machines. Type (if not dealt with by way of renewals).
Paper Bag Making	5 7½ 20	Written-down Value " " " "	Engines, boilers, and shafting. Electric motors and general plant. Motor vans.
Paper Box Making	7½ 20	Written-down Value " "	Plant and machinery. Motor vans.
Paper Mills	5 7½	Written-down Value " "	Machinery, working day only. Machinery, working day and night.
Printing	5 7½ 10	Written-down Value " " " "	Engines, boilers, and shafting. Printing and binding machines. Type (if not dealt with by way of renewals.)
Railway Wagons	5	Written-down Value	Railway wagons.  <i>Note.</i> —(a) The allowance applies to all wagons owned by traders; (b) in the case of wagons owned by railway companies, the method adopted is to allow the actual cost of renewals year by year.

SCHEDULE OF AGREED NORMAL RATES OF DEPRECIATION—*contd.*

Industry, etc.	Rate per Cent.	Prime Cost or Written-down Value.	Nature of Plant.
Shipping	4 3	Prime Cost " "	Steamships. Sailing vessels. <i>Note.</i> —With regard to ships purchased at second-hand at prices in excess of the written-down value at the date of purchase, the following arrangements have been made— (a) The allowance is made on the actual cost price of the ship to the owner for the time being without regard to the prime cost to a previous owner; (b) The rate of depreciation allowable is calculated by reference to the reasonable expectation of the life of the ship at the date of purchase from the previous owner.
Shoe and Slipper Making	5 10 20	Written-down Value " " " "	Engines, boilers, and shafting. Process plant. Motor vans and lorries.
Silk Manufacturing	5 7½ 10	Written-down Value " " " "	Steam engines, boilers, and shafting. General plant, including winding, throwing, doubling, and weaving machinery, and on electric motors. Sewing, braiding, and knitting machines.
Steam Laundry and Dyeing and Cleaning	7½ 20	Written-down Value " "	Plant and machinery generally. Motor vans.
Steel Manufacturers	5	Written-down Value	Machinery and plant used in manufacture of steel.
Timber Merchants, Saw Millers, and Manufacturers of Timber Goods	5 7½ 20	Written-down Value " " " "	Engines, boilers, and main shafting. General saw milling plant and machinery. Traction engines, tractors, motor cars, and haulage plant.
Tramways	— 3 7 5	— Written-down Value " " " "	Permanent way. Cables. Cars and other rolling stock. General plant and machinery (including standards, brackets and workshop tools). <i>Note.</i> —An allowance per mile of track based upon the estimated life of the permanent way.
Wrought Iron Industry	7½	Written-down Value	Plant and machinery generally.

## CHAPTER IV

### DEPRECIATION AS AFFECTING LOCAL AUTHORITIES

IN view of the fact that in works on accountancy attention is often drawn to the accounts of local authorities to show that no provision is being made for depreciation, it is perhaps not inappropriate to state a few observations on the subject. At the outset it may be mentioned that it is a significant fact that almost exclusively those accountants who claim that if provision for depreciation be not charged to revenue, in addition to Sinking Fund for the redemption of the loan debt, an unsound policy is being adopted, are not municipal accountants and, in many cases, have never been behind the counter of a municipal accountant's department nor have even troubled, before writing, to study the matter in a true aspect. Such a condemnation is analogous to the non-acceptance of the opinion of a medical specialist in the treatment of a disease of which he has made a special study in favour of an ordinary physician in general, or of the preference of an ordinary solicitor to plead one's case to a legal gentleman who has made a speciality of such cases as that in question.

Everyone knows that depreciation, wear and tear, obsolescence, fluctuation, etc., attack assets irrespective of their ownership. Shrinkage in value is no respecter of persons and, consequently, must be provided for and charged against Profit and Loss Account before profits are appropriated. The mere fact that one of the methods of providing for depreciation is the Sinking Fund (or Depreciation Fund) system should, in itself, be sufficient to the intelligent accountant to

cause him to reflect on the significant fact of the presence of a Sinking Fund charge in the accounts of a local authority and its absence in those of a commercial undertaking; and the presence of a charge for depreciation in the latter's accounts and the absence of such an item in the case of a local authority. And he is not unlikely to ask himself whether there is any connection between these two obvious differences in treatment of what appears to be one and the same thing differently termed.

It is no defence for the municipal accountant to contend that the law does not make it compulsory for a local authority to provide for depreciation, because exactly the same immunity can be claimed by a limited liability company, as shown by legal decisions given in the High Court.

The municipal accountant neither needs, nor wants, to make such a claim. His defence or, rather, his explanation, need only take the form of a mark at the side of the charge for depreciation as shown in his accounts, so that the outsider may see what he failed to observe without the municipal man's assistance but which was there all the time.

No matter what charges in the nature of insufficiency or absence of provisions for depreciation be launched, the eventual result in the case of a local authority is identical with the result which in all cases will be found under private ownership where provision for depreciation is charged in the accounts. This will be demonstrated presently. Suppose a private firm starts business with a certain amount of capital. The first Balance Sheet, if one were drawn out on the day of commencement, would show capital on one side, say, £15,000, and cash as an asset on the other side. Now assume it spends £15,000 on plant and machinery,



having a life of (say) ten years. The assets side now stands with plant and machinery £15,000. If, during the next ten years' trading, no provision be made for depreciation of the assets and the whole of the profit made be distributed, the position would be as shown by the following Balance Sheet—

## BALANCE SHEET

<i>Liabilities.</i>		<i>Assets.</i>	
Capital	£ 15,000	Plant and Machinery cost £15,000 (now worthless)	Nil
		Deficiency (being capital paid away as profits)	15,000
	<u>£15,000</u>		<u>£15,000</u>

Put in words, the position is this, the capital has been swamped or paid away as dividends ; the business can no longer carry on without the addition of a further £15,000 to buy new plant and machinery, and if this is forthcoming the capital will be so well watered that £30,000 will be outstanding in place of the original £15,000 and, consequently, dividends will show a very much diminished return. And at the end of each successive ten years' period the situation becomes equally acute and more unsound. But, suppose the proprietor or proprietors said we have had the £15,000 returned to us during the ten years and what we are bringing into the business as apparently further capital is only returning to the business what it paid us *in excess of what it ought to have done*. The £15,000 deficiency would be written-off against the £30,000 capital and the original starting position restored.

To some extent the position of a local authority is similar in principle. The asset is valueless, a Sinking Fund provided enough money to redeem the loan

capital, and the same (or other) money is re-borrowed, the local authority buys new assets and carries on none the worse. There is absolutely no insolvency, no imprudent dealing, no worse position created, but in the majority of cases the position is very sound, as the debt is repaid while the assets have a considerable value, which is a pure Reserve Fund or surplus as it is called in local authorities' accounts.

If there were no better argument in favour of the present system the above should be quite sufficient to convince and satisfy the most exacting accountant that the position is sound finance. His argument is that though a local authority provides for the redemption of its loan debt within the period sanctioned by the Government, such period is longer than the "life" of the assets bought out of the loan. Nothing can be better to illustrate a position than practical present-day examples and cases. To see these one need only examine copies of the Abstract of Accounts of a few local authorities who do not provide for depreciation, and the striking feature immediately observed is the huge surplus on each departmental Balance Sheet and on the aggregate Balance Sheet, representing valuable assets against which there is little or no debt outstanding. If the anti-municipal method advocates' contention were sound, one would notice deficiencies instead of surpluses. Then, again, the Government grants varying periods for the redemption of loans, ranging from seven to eighty years, and much of the money is expended on assets that do not depreciate but even appreciate, e.g. land, and on buildings with a life of three, four, or five times as long as the loan period.

But, even assume no periods were in excess, but just right, the position would then be sound.

Let us now revert to the illustration just given of a firm starting business with £15,000 capital, and assume that it adopts a prudent course and charges to the ten years' trading period, i.e. it debits to Profit and Loss Account, a total amount of £15,000 as depreciation on the plant and machinery. The Balance Sheet would then be—

## BALANCE SHEET

<i>Liabilities.</i>		<i>Assets.</i>	
	£		£
Capital . . . . .	15,000	Plant and machinery at cost (now valueless) .	15,000
Depreciation Fund . . . . .	15,000	Investments of Depreciation Fund (or cash if not invested) . . . . .	15,000
	<u>£30,000</u>		<u>£30,000</u>

It now realizes the investments, if not already in cash, and with the sums buys new plant and machinery costing £15,000 (*Dr.* New Plant and Machinery and *Cr.* Cash). It then writes off the debit balance on old Plant and Machinery Account against the credit balance on Depreciation Fund Account, and these two last-named accounts disappear. This is sound accounting.

Now let us consider what a local authority similarly placed would do, and see why such criminal charges should be launched against it.

It would start with a Balance Sheet showing mortgage debt outstanding £15,000, and plant and machinery value £15,000. At the end of ten years it would have made no provision for depreciation (specifically so named) but it would have accumulated £15,000 for the purpose of redeeming its mortgage debt. The Balance Sheet before redemption would be—

## BALANCE SHEET

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Mortgage Debts out- standing . . . . .	15,000	Plant and machinery (now valueless) . . . . .	15,000
Sinking Fund . . . . .	15,000	Cash or investments on Sinking Fund Account	15,000
	<u>£30,000</u>		<u>£30,000</u>

It redeems its debt with the cash and writes-off the old plant and machinery to a Sinking Fund Account and then obtains sanction to re-borrow a sum of £15,000 for the acquisition of new assets and starts again with a clean slate by borrowing a further £15,000 and spends it as before.

Suppose, after the ten years, neither private firm nor local authority finds it convenient or necessary to continue the undertaking, the private firm has a Depreciation Fund of £15,000 which it uses to repay its capital and the local authority has a Sinking Fund and redeems its mortgage debt. Everything is settled and in order in both cases.

Now let any accountant, financial expert, or other individual, substantiate (if possible) the least charge against the local authority either as a continuing concern or as a dissolved undertaking.

## BALANCE SHEET

<i>Liabilities.</i>	£	<i>Assets.</i>	£
Mortgage Debt . . . . .	15,000	Plant and machinery at cost (now valueless) . . . . .	15,000
Sinking Fund (for re- payment of debt) . . . . .	15,000	Investments (or cash)— Sinking Fund	
Depreciation Fund . . . . .	15,000	A/c . . . . .	15,000
		Depreciation Fund A/c . . . . .	15,000
	<u>£45,000</u>		<u>£30,000</u>
			<u>£45,000</u>

If he cannot do this let him defend the position that would have been created if his ideas had been put into operation and the local authority had provided for depreciation as well as for redemption of the debt. The Balance Sheet after the ten years would be as shown at foot of previous page.

Repay the debt with the cash on Sinking Fund Account ; purchase new plant and machinery with cash on Depreciation Fund Account, and write-off the debit balance on old Plant and Machinery Account against the credit balance on Depreciation Fund Account, and the position is—

## BALANCE SHEET

<i>Liabilities.</i>	<i>Assets.</i>
Sinking Fund (for the repayment of debt non-existent) . . . <u>£15,000</u>	Plant and Machinery (new) . . . <u>£15,000</u>

The Sinking Fund figure might now be termed Surplus or Reserve, but no matter how he tries to defend himself he has to admit that he has burdened the undertaking with a double charge during the ten years in order that its future might be all assets and no liabilities, or capital, a position which he could not for one moment support in commercial practice. Yet he illogically states that in order that local authorities shall be as sound as privately owned undertakings the public body must do something which a company cannot legally do and would never think of doing if it had the power. One such individual, disgusted with the action of local authorities, states that there is absolutely no connection whatever between paying off liabilities and earning profits, and under no possible circumstances can the payment of liabilities, as such, be a charge against revenue. This one statement

alone condemns his whole case, because if "under no possible circumstances can the payment of liabilities (mortgage debt), as such, be a charge against revenue" then the debit to revenue in respect of the Sinking Fund charge must be for depreciation. And he says no depreciation is provided for, so what is it?

In view of the great range of loan periods sanctioned by Government departments, based on the probable life of the works but always keeping well on the underside, it seems quite reasonable and logical that Parliament intended that the establishment of a Sinking Fund should take the place of depreciation charges, and this is certainly substantiated—

(1) Because the period sanctioned for repayment is calculated with regard to the life of the asset and taking into account an allowance for obsolescence;

(2) Because no provision for depreciation has been made incumbent upon local authorities;

(3) Because when the asset is exhausted there is no debt outstanding against it;

(4) Because when the asset is exhausted further borrowing for its renewal is sanctioned to the extent of the provision which has been made for repayment;

(5) Because if both Sinking Fund and depreciation are provided for, at the expiration of the period of the loan, the debt will be repaid and even if the asset is reduced to nil, the Depreciation Fund will be sufficient to provide for a new one and will benefit the (then) ratepayers by reason of its freedom from debt at the expense of the previous generation;

(6) When a statutory maximum is fixed to a Reserve Fund by local Acts, the legality of a depreciation provision is doubtful.

## CHAPTER V

### SINKING FUNDS OF LOCAL AUTHORITIES

THOUGH much has been said already on this phase of the subject, a few words about the practical application of local authorities' Sinking Funds may not be out of place. Sinking Funds of these bodies are generally of the accumulating type, though in certain circumstances the non-accumulating variety is more advantageous from the economical point of view. The general principles governing the two kinds of fund are in no way affected. But having regard to the fact that interest on investments of a Sinking Fund are subject to deduction of tax at a very high rate and that *in the case of local authorities such tax is not allowed as set-off* against rating fund interest, if the fund in connection with which the dividend accrues is a statutorily accumulating one, it is natural for a good municipal accountant to conserve the economical interests of the ratepayers.

Among the methods of repayment of borrowed moneys permitted by the Public Health Act, 1875, is that of setting up an accumulating Sinking Fund. The relevant portions of Sub-sections 4 and 5 of Section 234 of this Act read—

(4) The local authority . . . shall in every year set apart as a Sinking Fund and accumulate in the way of compound interest . . . such sum as will with accumulations . . . be sufficient after payment of all expenses, to pay off the moneys so borrowed within the period sanctioned.

(5) A local authority may at any time apply the whole or part of a Sinking Fund set apart under this Act in or towards the discharge of the moneys for the repayment of which the fund has been established.

The Municipal Corporations Act, 1882, Sections 112

and 113, empower the (now) Ministry of Health to impose conditions as to the method of repayment (of moneys borrowed under the provisions of the Act), i.e. whether it shall be by instalments or by Sinking Fund and to determine the particular investments in which the Sinking Fund moneys shall be placed.

The Local Government Act, 1888, permits, amongst other methods, that of repaying loans contracted under that Act "by means of a Sinking Fund set apart, invested, and applied in accordance with the Local Loans Act, 1875, and the Acts amending the same."

The Local Loans Act, 1875, Section 15, provides for the payment into the Sinking Fund each year of such equal yearly or half-yearly sums as, with accumulations will be sufficient, after payment of expenses, to discharge the loan and for the application of the fund or any part of it from time to time in or towards the discharge of the loan for which it was created.

From the Sinking Fund provisions of the above-mentioned Acts, it is clear that where repayment (or provision therefor) of loans is to be by means of a Sinking Fund, in the case of the Public Health Act and the Local Government Act, *accumulating* funds are specified as compulsory. The Municipal Corporations Act, though not stating that the fund shall consist partly of interest on investments, states that the Ministry may determine the particular investments of the fund, which might be taken to imply that the fund shall be an *accumulating* one.

The fact that a fund shall be invested does not of itself infer that the fund is accumulating partly with interest on investments. A non-accumulating fund is just as likely to be invested as is the other kind. But the dividend would be credited to Revenue Account instead of to Sinking Fund.



A non-accumulating fund in connection with which the interest is credited to Revenue Account involves a net charge to Revenue Account that decreases annually though it starts with a higher figure, while in the case of an accumulating fund, the annual charge is constant and smaller than the commencing figure under the other system.

As was stated in an earlier chapter, an accumulating Sinking Fund will only attain the exact amount required provided investments of the fund are made on the exact dates, at the exact rates of interest, and that no loss be sustained by reason of deductions of income tax not recoverable. These difficulties are all obviated by the establishment of non-accumulating funds. Assuming, however, that accumulating Sinking Funds are in operation, all the advantages of the non-accumulating fund can be secured by making the annual contribution from Revenue Account to the Sinking Fund, the ordinary contribution, plus the interest which the fund ought to earn in that year, and by carrying all dividends on investments to the credit of Revenue Account. By this means the fund automatically adjusts itself with Revenue Account annually.

Some municipal accountants, however, have a fear that such a procedure might be alleged to be a misappropriation of funds, i.e. crediting interest to Revenue Account instead of to Sinking Fund, even though a reverse action is simultaneously effected to put the fund straight. Whether this be looked upon as a misappropriation or not, the practical effect and intention is not one bit different from the laboured, orthodox way of crediting dividends to Sinking Fund and the making of an adjustment with Revenue Account to bring the fund to the total it should be.

The most probable disparity in the fund, before adjustment, will be a shortage and the remedy is obvious, but if it were a surplus, by reason of the interest on investments being in excess of anticipations, it would be equally a misappropriation to carry the excess to Revenue Account, though it would be quite in order to attain exactly the same effect by crediting all the dividend to Sinking Fund but reducing the *contribution* from Revenue Account.

The simplest way of all is to charge the current Revenue Account with the contribution, plus interest which the fund *should* earn, crediting these two to such fund, but instead of investing the accumulations, to use them to redeem mortgages either as they fall due, which will be a continually recurring matter, or to give notice of repayment when the terms admit, or to buy the authority's own stock in the open market. This procedure has the following merits—

(1) Differences in interest on accumulations of the Sinking Fund are automatically adjusted annually with Revenue Account.

(2) The trouble and expense of seeking investments are saved.

(3) The interest on the loans redeemed, saved to Revenue Account, is probably greater than the dividend that would be earned on the investments and also greater than the extra debit in respect of the larger contribution to Sinking Fund.

(4) There is no loss arising through tax on dividends received, and this is a considerable item.

(5) It is a direct compliance with the Public Health Act, 1875, Section 234 (5), and the Local Government Act, 1888 (incorporating the Local Loans Act, 1875, Section 15), and is not contrary to the provisions of the Municipal Corporations Act, 1882.

Though the Municipal Corporations Act, 1882, states that written consent of the Ministry of Health is required before the Sinking Fund may be applied in the redemption of debt, it is hardly likely that such permission would be withheld in view of the provisions of the other two Acts *and the purpose for which the Sinking Fund is created.*

### RATE OF ACCUMULATIONS

If the simple and economical method just stated be adopted, little thought need to be given to the rate of interest on the fund because the fund is adjusted annually in an automatic manner. The full charge to Revenue Account in respect of contribution and interest is the same; only the apportionment of it differs. Everyone knows that if the Sinking Fund accumulations are invested and credited to the fund, the higher the interest earned the less the revenue contribution, but whether the basic rate taken in computing the contributions is high or low, compared with the actual figure earned, the net result to Revenue Account is the same.

Leaving the question of kinds of Sinking Fund, the fact remains that the fund, whether termed accumulating or non-accumulating, *always accumulates* so far as the periodical contributions are concerned, even if the interest on investments is not allowed to swell the amount.

### HOW SINKING FUND IS DEALT WITH

The amounts standing to the credit of a Sinking Fund are dealt with in one of three ways, generally in the discretion of the chief financial officer and in the interests of economy. The three methods are—

- (1) To invest in authorized securities.
- (2) To use as new capital.
- (3) To redeem loans.

(1) **To Invest in Authorized Securities.** Sinking Funds of local authorities may be invested in certain securities only. Those established for the purpose of redeeming stock created under the Stock Regulations 1891, 1897, 1901, and 1921 may, by Articles 1 and 16 of the Stock Regulations, 1891, be invested in the following securities in addition to those specified for other Sinking Funds : any mortgage, bond, debenture, stock, annuity, rent-charge, rent, or other security of any local authority which has power to levy a rate or precept, excepting securities to bearer and its own securities.

Limitations on the investment of Sinking Funds other than those established under the Stock Regulations have the effect of confining investments to trustee securities. The Trust Investment Act, 1889, and the Trustee Act, 1893, provide that a local authority may invest its Sinking Funds in trustee securities (except real estate and its own securities), provided that it does not purchase at a higher price than 15 per cent premium any securities which are liable to be redeemed at a fixed time at a fixed price, nor any securities so redeemable which are at a price exceeding their redemption value, unless more than fifteen years will elapse before the time fixed for redemption. The list of trustee investments is set out in the Trustee Act, 1893, Section 1, as extended by the Colonial Stock Act, 1900, Section 1. The following is a short list of the principal securities in which local authorities may invest their Sinking Funds under the Public General Acts—

British Government Stocks.

Stocks the dividend on which is guaranteed by Parliament.

Colonial Stocks.

Indian Government Stocks.

County Council Stocks,

Stocks of the corporations of towns with a population of 50,000 or more.

Metropolitan Water Board Stocks.

Metropolitan Police Debenture Stock.

Nominal Debentures and Nominal Debenture Stock under the Local Loans Act, 1875.

Bank of England and Bank of Ireland Stocks.

British and Irish Railway Companies' Debenture Guaranteed and Preference Stock, provided they have paid dividends on each of their ordinary stocks during each of the last ten years.

Stocks of Railway and Canal Companies leased for 200 years or more to the Railway Companies just mentioned.

Certain Indian Railway Debenture Stocks and Annuities.

Debenture Guaranteed and Preference Stocks of British and Irish Water Companies, incorporated by special Act of Parliament or charter, and which have paid dividends of not less than 5 per cent on their ordinary stocks each year for the past ten years.

Mortgages of Local Authorities which have power to borrow under the Housing Acts by local bonds.

Where the Government Department, when sanctioning borrowing, has not specified the particular investments in which the Sinking Fund must be placed (and the cases in which such power is exercised are comparatively few) the Sinking Fund accumulations may be left in the bank and this really amounts to an investment. And there is something to be said in favour of this procedure quite apart from its simplicity. It helps to keep the aggregate bank account of the corporation in credit, it is always available at call when required without any loss on realization, depreciation, stock-brokers' charges, stamp duties, etc., and (especially by arrangement with the banker, and even without)

earns interest not much below that which it would earn if invested, by reason of the fact that no tax is deducted from bank interest, while other interest is subject to the enormous confiscation of five shillings out of every twenty without any power of recoupment by means of "set-off." For example,  $3\frac{1}{2}$  per cent from a banker yields as much to a local authority as 5 per cent from an ordinary investment. It is thus quite conceivable for the bank interest to be the better yield.

(2) **The Use of Sinking Funds as New Capital.** This has been dealt with in an earlier chapter (see page 11).

(3) **To Redeem Loans.** It is logical that if any outstanding debt is bearing interest at a rate higher than that obtainable from an investment or from bank interest, and if any such debt is falling due for repayment or can be made to do by giving notice to the holders, it is advantageous and economical to redeem either by discharging mortgages or by purchasing stock on the open market through the authority's broker or banker. In the case of stock the market price is an important factor and the chief financial officer will determine whether or not it is economical to purchase after calculating the yield (or really saving) of interest by buying at the current price and comparing this with the return which the Sinking Fund moneys would produce from other channels. Incidentally, the usage of Sinking or Redemption Funds in the redemption of debt in this way may be an advantage over other methods of application of the funds by reason of the reduction of the total indebtedness of the local authority and simultaneously the reduction of the work connected therewith.

## CHAPTER VI

### LOCAL AUTHORITIES AND RESERVE FUNDS

The existence of Reserve Funds is often shown by the Balance Sheets of local authorities, but not in the accounts of the rate-fund departments. The departments in connection with which they are generally found are : electricity, gas, tramways, and waterworks, which are undertakings worked under the provisions of local Acts, or the general statutes passed specially to deal with the services in question, whether owned municipally or privately.

The statutory provisions of the general Acts relating to the establishment of Reserve Funds are as follows—

The Electric Lighting (Clauses) Act, 1899, Clause 7, provides that local authorities shall, after paying working and establishment expenses, paying interest, and providing instalments to Sinking Fund, and any other expenses which cannot properly be charged to capital, provide a " Reserve Fund, if they think fit, by setting aside such money as they think reasonable," and accumulate it at compound interest until the fund so formed amounts to one-tenth of the aggregate capital expenditure on the undertaking. The Reserve Fund shall be applicable to answer any deficiency at any time happening in the income of the undertaking, or to meet any extraordinary claim or demand arising in respect of it. When the fund reaches the prescribed limit, the annual proceeds of it must be credited to the local rate, to the improvement of the district of the local authority, or in the

reduction of the capital moneys borrowed for electricity purposes.

The Gasworks Clauses Act, 1847 (if incorporated in later Acts), Section 31, provides that a Reserve Fund shall be limited to one-tenth of the nominal capital, and that after the fund has reached its limit the interest on the Reserve Fund investments shall be applied to any of the general purposes of the undertaking to which profits are applicable.

The Tramways Act, 1870, apparently gives no power to create a Reserve Fund, but in the case of tramways worked under the provisions of the Light Railways Acts, power is given to a local authority to establish a Reserve Fund if they think fit (after providing for the payment of working and establishment expenses and the cost of maintenance, interest on debt, loan repayment, and other expenses properly incurred) to the extent of a specified sum (mentioned in the order). The income from a Reserve Fund that has attained its specified limit shall be carried to the credit of the prescribed rate fund.

Waterworks, if not governed by a local Act, are often worked under the provisions of the Public Health Acts, which do not authorize the creation of Reserve Funds, but which regard such undertakings as coming in the category of a public sanitary service chargeable on the local rates.

Where a statute states the maximum Reserve Fund to be a certain percentage of the capital of the undertaking—in the case of a local authority, where the loan debt outstanding (the equivalent of a commercial concern's capital) is a changing figure—the total capital expenditure on the undertaking is generally taken as the figure, in the place of "capital."

In all cases where a trading department is governed



by a local Act such statutory authority authorizes (or otherwise) the establishment of a Reserve Fund and its limit, and consequently no special comment is needed.

In the case of non-trading, or semi-trading departments (the latter including those which produce income, but which are not even self-supporting) there is at first sight an apparent absence of Reserve Funds. By this specific title it is so.

But in nearly every case the equivalent of a Reserve Fund is very obvious. It is termed "surplus" in the majority of cases, while in the others are found such descriptions as "provision towards capital outlay," "excess of assets over outstanding debt and liabilities," and in some cases it is made less noticeable by giving a separate (appropriate) title to each item that would otherwise form part of the surplus or reserve.

The principal items comprising the surplus are—

(1) Debt redeemed out of provision made out of Revenue Account.

(2) Provision for the redemption of debt, i.e. balances standing to the credit of Sinking Fund or Redemption Fund Account.

(3) Revenue contributions to capital outlay (i.e. capital expenditure defrayed out of rate or Revenue Account in lieu of raising loans).

(4) Gifts of property, shown as assets, but for which no debt was raised.

And in the case of trading undertakings (but not generally in rate-fund accounts)—

(5) General Reserve Fund (if any).

(6) Balance standing to the credit of Revenue Account.

Items (1) to (4) are *capital* surpluses and are dependent on the maintenance of capital assets at the

values shown in the Balance Sheet. None of these items is available in reduction of rates or charges. Items (5) and (6) are *revenue* surpluses and are "real" surpluses which may be used in reduction of future rates and charges.

In order to ascertain the actual surplus (or reserve) any depreciation in value of capital assets must be deducted from the cost of them and from the total surplus. This being done (and in many abstracts of accounts the assets are shown at present-day value, irrespective of cost) the amount remaining in Surplus Account is truly a Reserve Fund.

The fact that almost invariably Items (1) and (2) exceed the depreciation proves that the period sanctioned for the redemption of debt is shorter than the life of the assets the acquisition of which occasioned the debt, and that the provision of a Sinking Fund or Redemption Fund is more than equivalent to the charging of depreciation in the accounts.

The statutes authorizing the levying of rates and legal cases on the matter all go to prove most emphatically that no revenue surplus may exist on a Rate Fund Account arising out of excessive estimated requirements. A rate may only be made to cover the deficiency that is likely to arise on the Rate Fund during the coming financial period, together with any deficiency already standing to the debit of the fund (providing such is not more than six months old). If any surplus be found on the fund at the end of the period of the rate it must be applied in reduction of the next rate.

That no revenue surplus may be allowed to remain on a rate fund is emphasized still further by Section 143 of the Municipal Corporations Act, 1882, which clearly indicates that any surplus on the Borough

Fund (arising other than out of rates levied, and undoubtedly meaning the natural income of those accounts and services the expenditure on which is chargeable to the Borough Fund) must be applied for the public benefit of the inhabitants and improvement of the borough.

Obviously, such a surplus (rarely met with) is one that arises on the fund even though no rate be necessary. But it is clear that even an excess of this kind must be spent and not carried forward as a reserve.

Though no *revenue* surplus is permissible on a Rate Fund Account, no statute, legal decision, or opinion of Government Department is opposed to the creation of a *capital* surplus; rather do all appear to favour one, as can be deduced from the following facts—

(1) The Public Health Act, 1875, and the Municipal Corporations Act, 1882, make the application for borrowing powers for defraying capital expenditure quite optional. There is nothing to prevent a corporation incurring any expenditure (including capital expenditure) authorized by the Acts and raising the same in a rate.

(2) When application is made and received, for borrowing powers, the sanction of the Government Department states that the debt must be redeemed *within* a period *not exceeding* so many years from the date of borrowing. There is apparently no objection to making provision to discharge the liability in a shorter period.

From the foregoing observations the position with regard to Reserve Funds of local authorities appears to be—

(1) That a distinction must be made between capital Reserve Funds and revenue Reserve Funds.

(2) That a capital surplus is not available in the reduction of rates or charges.

(3) That even though the greater part of a capital surplus (in fact, the whole of it, except gifts of property, etc.) is created by transfer from Revenue or Rate Account immediately the transfer is made (i.e. to Sinking Fund, Redemption Fund, in discharge of a loan from Revenue or Rate Account direct, or in the purchase out of revenue or rate account of assets in lieu of borrowing) it irrevocably ceases to be of a revenue nature and could not be re-transferred (other than where it had been transferred in error).

(4) That there is no general statutory authority for the creation or retention of a revenue surplus on rate fund accounts and that if a situation arises which causes a surplus, either being rate levied in excess of requirements, or excess of income (in the case of the Borough Fund) from other sources, such surplus must be got rid of forthwith, either in reduction of the next rate, or applied for the public benefit, as previously stated.

(5) That reserve funds, capital and revenue may, and often do, exist in the accounts of trading undertakings. But these are governed principally by local Act, or by general statute, as before mentioned.

In this chapter the term *Reserve Fund* (or surplus) has been carefully stated every time, in order that no possible confusion should arise with *reserves* for temporary purposes, as dealt with in the chapter concerning reserves.



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